Data Center Knowledge

This chapter describes cloud computing technology and its impact on the data center network. We define the essential elements of cloud computing, including on-demand service, broad network access, resource pooling, elastic provisioning, and metered service at various quality of service levels. Models including software, platform, and infrastructure as a service (SaaS, PaaS, IaaS) are discussed, along with private, public, and hybrid cloud models and cloud service providers. Unique requirements of a cloud network include virtualization and virtual machine mobility, security, hypervisor virtual switching, converged storage, and new routing protocols such as Transparent Interconnection of Lots of Links (TRILL) and Shortest Path Bridging (SPB). We conclude with a brief discussion of software-defined networking (SDN) in the context of cloud computing. How-to guidance for optimizing incumbent technologies to deliver a better product and gain competitive advantage Their zip codes are far from Silicon Valley. Their SIC codes show retail, automobile or banking. But industry after industry is waking up to the opportunity of "smart" products and services for their increasingly tech-savvy customers. Traditionally technology buyers, they are learning to embed technology in their products and become technology vendors. In turn, if you analyze Apple, Google, Amazon, Facebook, Twitter and eBay, you marvel at their data centers, retail stores, application ecosystems, global supply chains, design shops. They are considered "consumer" tech but have better technology at larger scale than most enterprises. The old delineation of technology buyer and vendor is obsolete. There is a new definition for the technology elite - and you find them across industries and geographies. The 17 case studies and 4 guest columns spread through The New Technology Elite bring out the elite attributes in detail. Every organization will increasingly be benchmarked against these elite - and soon will be competing against them. Contrasts the productivity that Apple, Google and others have demonstrated in the last decade to that of the average enterprise technology group Reveals how to leverage what companies have learned from Google, Apple, Amazon.com, and Facebook to your company's advantage Designed for business practitioners, CEOs, CFOs, CIOs, technology vendors, venture capitalists, IT consultants, marketing executives, and policy makers Other titles by Vinnie Mirchandani: The New Polymath: Profiles in Compound-Technology Innovations If you're looking to encourage technology innovation, look no further. The New Technology Elite provides the building blocks your company needs to become innovative through incumbent technologies.

Scholars from a range of disciplines interrogate terms relevant to critical studies of big data, from abuse and aggregate to visualization and vulnerability. This pathbreaking work offers an interdisciplinary perspective on big data, interrogating key terms. Scholars from a range of disciplines interrogate concepts relevant to critical studies of big data--arranged glossary style, from from abuse

and aggregate to visualization and vulnerability--both challenging conventional usage of such often-used terms as prediction and objectivity and introducing such unfamiliar ones as overfitting and copynorm. The contributors include both leading researchers, including N. Katherine Hayles, Johanna Drucker and Lisa Gitelman, and such emerging agenda-setting scholars as Safiya Noble, Sarah T. Roberts and Nicole Starosielski.

Provides the fundamentals, technologies, and best practices in designing, constructing and managing mission critical, energy efficient data centers Organizations in need of high-speed connectivity and nonstop systems operations depend upon data centers for a range of deployment solutions. A data center is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes multiple power sources, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. With contributions from an international list of experts, The Data Center Handbook instructs readers to: Prepare strategic plan that includes location plan, site selection, roadmap and capacity planning Design and build "green" data centers, with mission critical and energy-efficient infrastructure Apply best practices to reduce energy consumption and carbon emissions Apply IT technologies such as cloud and virtualization Manage data centers in order to sustain operations with minimum costs Prepare and practice disaster reovery and business continuity plan The book imparts essential knowledge needed to implement data center design and construction, apply IT technologies, and continually improve data center operations.

This book reviews the applications, technologies, standards, and other issues related to Smart Cities. The book is divided into broad topical sections including Vision & Reality, Technologies & Standards, Transportation Considerations, and Infrastructure & Environment. In these sections, authors who are experts in their fields present essential aspects of applications, technologies, requirements, and best-practices. In all cases, the authors have direct, substantive experience with the subject and present an important viewpoint driven by industry or governmental interests; the authors have each participated in the development and/or deployment of constituent technologies, standards, and applications, and share unique perspectives on key areas of the Smart City.

This book constitutes extended, revised and selected papers from the 7th Ith International Conference on Cloud Computing and Service Science, CLOSER 2017, held in Porto, Portugal, in April 2017. The 16 papers presented in this volume were carefully reviewed and selected from a total of 123 submissions. CLOSER 2017 focused on the emerging area of Cloud Computing, inspired by some latest advances that concern the infrastructure, operations and available services throughout the global network.

This title takes the broadest possible scope to interrogate the emergence of "platform urbanism", examining how it transforms urban infrastructure,

governance, knowledge production, and everyday life, and brings together leading scholars and early-career researchers from across five continents and multiple disciplines. The volume advances theoretical debates at the leading edge of the intersection between urbanism, governance, and the digital economy, by drawing on a range of empirically detailed cases from which to theorize the multiplicity of forms that platform urbanism takes. It draws international comparisons between urban platforms across sites, with attention to the leading edges of theory and practice and explores the potential for a renewal of civic life, engagement, and participatory governance through "platform cooperativism" and related movements. A breadth of tangible and diverse examples of platform urbanism provides critical insights to scholars examining the interface of digital technologies and urban infrastructure, urban governance, urban knowledge production, and everyday urban life. The book will be invaluable on a range of undergraduate and postgraduate courses, as well as for academics and researchers in these fields, including anthropology, geography, innovation studies, politics, public policy, science and technology studies, sociology, sustainable development, urban planning, and urban studies. It will also appeal to an engaged, academia-adjacent readership, including city and regional planners, policymakers, and third-sector researchers in the realms of citizen engagement, industrial strategy, regeneration, sustainable development, and transport. Massive data sets pose a great challenge to many cross-disciplinary fields, including statistics. The high dimensionality and different data types and structures have now outstripped the capabilities of traditional statistical, graphical, and data visualization tools. Extracting useful information from such large data sets calls for novel approache The free and open source software movement, from its origins in hacker culture, through the development of GNU and Linux, to its commercial use today. In the 1980s, there was a revolution with far-reaching consequences—a revolution to restore software freedom. In the early 1980s, after decades of making source code available with programs, most programmers ceased sharing code freely. A band of revolutionaries, self-described "hackers," challenged this new norm by building operating systems with source code that could be freely shared. In For Fun and Profit, Christopher Tozzi offers an account of the free and open source software (FOSS) revolution, from its origins as an obscure, marginal effort by a small group of programmers to the widespread commercial use of open source software today. Tozzi explains FOSS's historical trajectory, shaped by eccentric personalities—including Richard Stallman and Linus Torvalds—and driven both by ideology and pragmatism, by fun and profit. Tozzi examines hacker culture and its influence on the Unix operating system, the reaction to Unix's commercialization, and the history of early Linux development. He describes the commercial boom that followed, when companies invested billions of dollars in products using FOSS operating systems; the subsequent tensions within the FOSS movement; and the battles with closed source software companies

(especially Microsoft) that saw FOSS as a threat. Finally, Tozzi describes FOSS's current dominance in embedded computing, mobile devices, and the cloud, as well as its cultural and intellectual influence.

Along with its interrelated companion volume, The Content, Impact, and Regulation of Streaming Video, this book covers the next generation of TV—streaming online video, with details about its present and a broad perspective on the future. It reviews the new technical elements that are emerging, both in hardware and software, their long-term trend, and the implications. It discusses the emerging 'media cloud' of video and infrastructure platforms, and the organizational form of such TV.

The overarching research topic addressed in this book is the complex and multifaceted interaction between infrastructural accessibility/connectivity of city-regions on the one hand and knowledge generation in these city-regions on the other hand. To this end, the book brings together chapters analysing how infrastructural accessibility is related to changing patterns of business location of knowledge-intensive industries in city-regions. The chapters in this book specifically dwell on recent manifestations of and developments in the accessibility/knowledge-nexus, with a particular metageographical focus on how this materializes in major city-regions. In the different chapters, this shifting relation is broached from different perspectives (seaports, airports, brainports), at different scales (ranging from global-scale analyses to case studies), and by adopting a variety of methodologies (straddling the wide variety of methodological approaches currently adopted in human geography research). Researchers contributing to this edited volume come from different scholarly backgrounds (sociology, human geography, regional planning), which allows for a varied treatise of this research topic.

Data Centers are the drivers of the digital economy. Understanding how data centers are designed, how they work and how they interact with the services we use is key towards building a great career in a digital world. This book will provide the reader with a firm foundation for understanding Data Center design.

This book is meant to offer Architects, Property Mangers, Facility Managers, Building Engineers, Information Technology Professionals, Data Center Personnel, Electrical & Mechanical Technicians and students in undergraduate, graduate, or continuing education programs relevant insight into the Mission Critical Environment with an emphasis on business resiliency, data center efficiency, and green power technology. Industry improvements, standards, and techniques have been incorporated into the text and address the latest issues prevalent in the Mission Critical Industry. An emphasis on green technologies and certifications is presented throughout the book. In addition, a description of the United States energy infrastructure's dependency on oil, in relation to energy security in the mission critical industry, is discussed. In conjunction with this, either a new chapter will be created on updated policies and regulations specifically related to the mission critical industry or updates to policies and

regulations will be woven into most chapters. The topics addressed throughout this book include safety, fire protection, energy security and data center cooling, along with other common challenges and issues facing industry engineers today. This book gathers selected papers presented at the conference "Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology," one of the first initiatives devoted to the problems of 3D imaging in all contemporary scientific and application areas. The aim of the conference was to establish a platform for experts to combine their efforts and share their ideas in the related areas in order to promote and accelerate future development. This second volume discusses algorithms and applications, focusing mainly on the following topics: 3D printing technologies; naked, dynamic and auxiliary 3D displays; VR/AR/MR devices; VR camera technologies; microprocessors for 3D data processing; advanced 3D computing systems; 3D data-storage technologies; 3D data networks and technologies; 3D data intelligent processing; 3D data cryptography and security; 3D visual quality estimation and measurement; and 3D decision support and information systems.

Mohamed Medhat Gaber "It is not my aim to surprise or shock you – but the simplest way I can summarise is to say that there are now in the world machines that think, that learn and that create. Moreover, their ability to do these things is going to increase rapidly until – in a visible future – the range of problems they can handle will be coextensive with the range to which the human mind has been applied" by Herbert A. Simon (1916-2001) 1Overview This book suits both graduate students and researchers with a focus on discovering knowledge from scienti c data. The use of computational power for data analysis and knowledge discovery in scienti c disciplines has found its roots with the re- lution of high-performance computing systems. Computational science in physics, chemistry, and biology represents the rst step towards automation of data analysis tasks. The rational behind the developmentof computationalscience in different - eas was automating mathematical operations performed in those areas. There was no attention paid to the scienti c discovery process. Automated Scienti c Disc- ery (ASD) [1–3] represents the second natural step. ASD attempted to automate the process of theory discovery supported by studies in philosophy of science and cognitive sciences. Although early research articles have shown great successes, the area has not evolved due to many reasons. The most important reason was the lack of interaction between scientists and the automating systems.

Knowledge Discovery in Big Data from Astronomy and Earth Observation: Astrogeoinformatics bridges the gap between astronomy and geoscience in the context of applications, techniques and key principles of big data. Machine learning and parallel computing are increasingly becoming cross-disciplinary as the phenomena of Big Data is becoming common place. This book provides insight into the common workflows and data science tools used for big data in astronomy and geoscience. After establishing similarity in data gathering, pre-

processing and handling, the data science aspects are illustrated in the context of both fields. Software, hardware and algorithms of big data are addressed. Finally, the book offers insight into the emerging science which combines data and expertise from both fields in studying the effect of cosmos on the earth and its inhabitants. Addresses both astronomy and geosciences in parallel, from a big data perspective Includes introductory information, key principles, applications and the latest techniques Well-supported by computing and information science-oriented chapters to introduce the necessary knowledge in these fields

A must-have study guide for exam 640-911 on Cisco's UnifiedData Center The Cisco Certified Network Associate Data Center certificationis Cisco's newest certification, covering the Cisco Unified DataCenter technologies. Written by unparalleled author and Ciscoauthority Todd Lammle, and CCIE John Swartz, this comprehensivestudy guide is essential reading for anyone preparing to take the640-911 exam (Introducing Cisco Data Center Networking), providingin-depth coverage of all the exam's objectives. In addition, itoffers expanded coverage on key topics reflected on the exam. Addresses understanding basic networking and ethernettechnologies Reviews the OSI and DoD model and TCP/IP Transport Layer Covers basic IP routing technologies, layer 2 switchingtechnologies, and routing principles Provides an introduction to Nexus switch as well as how toconfigure it CCNA Data Center Study Guide offers you access toadditional study tools, including bonus practice exams, electronicflashcards, a searchable PDF of a glossary of terms. Plus, you willbe able to use the free nexus simulator to perform all the hands-onlabs in the book.

An introduction to next-generation web technologies This is a comprehensive, candid introduction to Web 2.0 for every executive, strategist, technical professional, and marketer who needs to understand its implications. The authors illuminate the technologies that make Web 2.0 concepts accessible and systematically identify the business and technical best practices needed to make the most of it. You'll gain a clear understanding of what's really new about Web 2.0 and what isn't. Most important, you'll learn how Web 2.0 can help you enhance collaboration, decision-making, productivity, innovation, and your key enterprise initiatives. The authors cut through the hype that surrounds Web 2.0 and help you identify the specific innovations most likely to deliver value in your organization. Along the way, they help you assess, plan for, and profit from user-generated content, Rich Internet Applications (RIA), social networking, semantic web, content aggregation, cloud computing, the Mobile Web, and much more. This is the only book on Web 2.0 that: Covers Web 2.0 from the perspective of every participant and stakeholder, from consumers to product managers to technical professionals Provides a view of both the underlying technologies and the potential applications to bring you up to speed and spark creative ideas about how to apply Web 2.0 Introduces Web 2.0 business applications that work, as demonstrated by actual Cisco® case studies Offers detailed, expert insights into the technical infrastructure and development practices raised by Web 2.0

Previews tomorrow's emerging innovations—including "Web 3.0," the Semantic Web Provides up-to-date references, links, and pointers for exploring Web 2.0 first-hand Krishna Sankar, Distinguished Engineer in the Software Group at Cisco, currently focuses on highly scalable Web architectures and frameworks, social and knowledge graphs, collaborative social networks, and intelligent inferences. Susan A. Bouchard is a senior manager with US-Canada Sales Planning and Operations at Cisco. She focuses on Web 2.0 technology as part of the US-Canada collaboration initiative. Understand Web 2.0's foundational concepts and component technologies Discover today's best business and technical practices for profiting from Web 2.0 and Rich Internet Applications (RIA) Leverage cloud computing, social networking, and user-generated content Understand the infrastructure scalability and development practices that must be address-ed for Web 2.0 to work Gain insight into how Web 2.0 technologies are deployed inside Cisco and their business value to employees, partners, and customers 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. Category: General Networking Covers: Web 2.0 This book describes warehouse-scale computers (WSCs), the computing platforms that power cloud computing and all the great web services we use every day. It discusses how these new systems treat the datacenter itself as one massive computer designed at warehouse scale, with hardware and software working in concert to deliver good levels of internet service performance. The book details the architecture of WSCs and covers the main factors influencing their design, operation, and cost structure, and the characteristics of their software base. Each chapter contains multiple real-world examples, including detailed case studies and previously unpublished details of the infrastructure used to power Google's online services. Targeted at the architects and programmers of today's WSCs, this book provides a great foundation for those looking to innovate in this fascinating and important area, but the material will also be broadly interesting to those who just want to understand the infrastructure powering the internet. The third edition reflects four years of advancements since the previous edition and nearly doubles the number of pictures and figures. New topics range from additional workloads like video streaming, machine learning, and public cloud to specialized silicon accelerators, storage and network building blocks, and a revised discussion of data center power and cooling, and uptime. Further discussions of emerging trends and opportunities ensure that this revised edition will remain an essential resource for educators and professionals working on the next generation of WSCs. This book provides basic and fundamental knowledge of various aspects of energy-aware computing at the component, software, and system level. It provides a broad range of topics dealing with power-, energy-, and temperature-related research areas for individuals from industry and academia.

Data centers consume roughly 1% of the total electricity demand, while ICT as a whole consumes around 10%. Demand is growing exponentially and, left unchecked, will grow to an estimated increase of 20% or more by 2030. This book covers the energy consumption and minimization of the different data center components when running real workloads, taking into account the types of instructions executed by the servers. It presents the different air- and liquid-cooled technologies for servers and data centers with some real examples, including waste heat reuse through adsorption chillers, as well as the hardware and software used to measure, model and control energy. It computes and compares the Power Usage Effectiveness and the Total Cost of Ownership of new and existing data centers with different cooling designs, including free cooling and waste heat reuse leading to the Energy Reuse Effectiveness. The book concludes by demonstrating how a well-designed data center reusing waste heat to produce chilled water can reduce energy consumption by roughly 50%, and how renewable energy can be used to create net-zero energy data centers. Delivering the latest research and most current coverage available, PRINCIPLES OF INFORMATION SYSTEMS, 12E equips students with a solid understanding of the core principles of IS and how it is practiced. Covering the latest developments from the field and their impact on the rapidly changing role of today's IS professional, the twelfth edition includes expanded coverage of mobile solutions, an increased focus on energy and environmental concerns, new discussions on the growing use of cloud computing across the globe, a stronger career emphasis, and a fully updated running case. Learning firsthand how information systems can increase profits and reduce costs, students explore new information on e-commerce and enterprise systems, artificial intelligence, virtual reality, green computing, and other issues reshaping the industry. The text introduces the challenges and risks of computer crimes, hacking, and cyberterrorism. It also presents some of the most current research on virtual communities and global IS work solutions as well as social networking. A long-running example illustrates how technology was used in the design, development, and production of this text. No matter where students' career paths may lead, PRINCIPLES OF INFORMATION SYSTEMS, 12E can help them maximize their success as employees, decision makers, and business leaders. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Silicon photonics uses chip-making techniques to fabricate photonic circuits. The emerging technology is coming to market at a time of momentous change. The need of the Internet content providers to keep scaling their data centers is becoming increasing challenging, the chip industry is facing a future without Moore's law, while telcos must contend with a looming capacity crunch due to continual traffic growth. Each of these developments is significant in its own right. Collectively, they require new thinking in the design of chips, optical components, and systems. Such change also signals new business opportunities and

disruption. Notwithstanding challenges, silicon photonics' emergence is timely because it is the future of several industries. For the optical industry, the technology will allow designs to be tackled in new ways. For the chip industry, silicon photonics will become the way of scaling post-Moore's law. New system architectures enabled by silicon photonics will improve large-scale computing and optical communications. Silicon Photonics: Fueling the Next Information Revolution outlines the history and status of silicon photonics. The book discusses the trends driving the datacom and telecom industries, the main but not the only markets for silicon photonics. In particular, developments in optical transport and the data center are discussed as are the challenges. The book details the many roles silicon photonics will play, from wide area networks down to the chip level. Silicon photonics is set to change the optical components and chip industries; this book explains how. Captures the latest research assessing silicon photonics development and prospects Demonstrates how silicon photonics addresses the challenges of managing bandwidth over distance and within systems Explores potential applications of SiP, including servers, datacenters, and Internet of Things

Written by 58 experts and reviewed by a seasoned technical advisory board, the Data Center Handbook is a thoroughly revised, one-stop resource that clearly explains the fundamentals, advanced technologies, and best practices used in planning, designing, building and operating a mission-critical, energy-efficient, sustainable data center. This handbook, in its second edition, covers anatomy, ecosystem and taxonomy of data centers that enable the Internet of Things and artificial intelligent ecosystems and encompass the following: SECTION 1: DATA CENTER OVERVIEW AND STRATEGIC PLANNING · Megatrends, the IoT, artificial intelligence, 5G network, cloud and edge computing · Strategic planning forces, location plan, and capacity planning · Green design & construction guidelines and best practices · Energy demand, conservation, and sustainability strategies · Data center financial analysis & risk management SECTION 2: DATA CENTER TECHNOLOGIES · Software-defined environment · Computing, storage, network resource management · Wireless sensor networks in data centers · ASHRAE data center guidelines · Data center telecommunication cabling, BICSI and TIA 942 · Rack-level and server-level cooling · Corrosion and contamination control · Energy saving technologies and server design · Microgrid and data centers SECTION 3: DATA CENTER DESIGN & CONSTRUCTION · Data center site selection · Architecture design: rack floor plan and facility layout · Mechanical design and cooling technologies · Electrical design and UPS · Fire protection · Structural design · Reliability engineering · Computational fluid dynamics · Project management SECTION 4: DATA CENTER OPERATIONS TECHNOLOGIES · Benchmarking metrics and assessment · Data center infrastructure management · Data center air management · Disaster recovery and business continuity management The Data Center Handbook: Plan, Design, Build, and Operations of a Smart Data Center belongs on the bookshelves of any

professionals who work in, with, or around a data center.

This book investigates the coordinated power management of multi-tenant data centers that account for a large portion of the data center industry. The authors include discussion of their quick growth and their electricity consumption, which has huge economic and environmental impacts. This book covers the various coordinated management solutions in the existing literature focusing on efficiency, sustainability, and demand response aspects. First, the authors provide a background on the multi-tenant data center covering the stake holders, components, power infrastructure, and energy usage. Then, each power management mechanism is described in terms of motivation, problem formulation, challenges and solution.

I have written this book solely keeping in mind the issues and challenges being faced during my 15+ years of tenure as Data Center manager and share my experience and expertise to the professionals who are already managing the Data Centers or aspiring professionals who are looking for the career in the Data Center operations. I have attended various Data Center workshops, seminars, trainings and certifications but feel there's no consolidated and complete user friendly study material available which can provide the insight on the various Data Center discipline such as Civil/Architecture, Electrical, Mechanical, Telecom, Safety & Security, IT and other miscellaneous technologies and methods being used. This book will provide the details of managing the day to day operations of the Data Center to achieve high availability, fault tolerent, reliability and resiliency. It covers People, Process and Technologies. I hope readers will find this book useful and very much affordable since the idea to write this book is to spread the awareness and knowledge.

This book gives a comprehensive guide on the fundamental concepts, applications, algorithms, protocols, new trends and challenges, and research results in the area of Green Information and Communications Systems. It is an invaluable resource giving knowledge on the core and specialized issues in the field, making it highly suitable for both the new and experienced researcher in this area. Key Features: Core research topics of green information and communication systems are covered from a network design perspective, giving both theoretical and practical perspectives Provides a unified covering of otherwise disperse selected topics on green computing, information, communication and networking Includes a set of downloadable PowerPoint slides and glossary of terms for each chapter A 'whose-who' of international contributors Extensive bibliography for enhancing further knowledge Coverage includes: Smart grid technologies and communications Spectrum management Cognitive and autonomous radio systems Computing and communication architectures Data centres Distributed networking Cloud computing Next generation wireless communication systems 4G access networking Optical core networks Cooperation transmission Security and privacy Core research topics of green information and communication systems are covered from a network design perspective, giving both a theoretical and practical perspective A 'whose-who' of international contributors Extensive bibliography for enhancing further knowledge

Gain the practical knowledge you need to plan, design, deploy, and manage mixed cloud and on-premises IT management systems. Drawing on his experience as senior principal software architect at CA Technologies, Marvin Waschke lays out the nuts and bolts of the IT Infrastructure Library (ITIL)—the 5-volume bible of standard IT service

management practices that is the single most important tool for aligning IT services with business needs. Many enterprise IT management applications, and the ways they are integrated, come directly from ITIL service management requirements. Types of integration include integrated reporting and dashboards, event-driven integration, device integration, and application data integration. Enterprise integration depends critically on high performance, scalability, and flexibility. Failure to integrate applications to service management requirements results in such wryly anticipated spectacles as the annual crash of the websites of Super Bowl advertisers such as Coca-Cola and Acura. Waschke weighs in on the debate between those who advocate integrating "best-of-breed" applications and those who favor a pre-integrated set of applications from a single vendor. He also rates the strengths and weaknesses of the major architectural patterns—central relational databases, service-oriented architecture (SOA), and enterprise data buses—for IT integration of service management applications. He examines the modifications to traditional service management that are required by virtualized systems of datacenter management and application design. Clouds present special problems for integration. How Clouds Hold IT Together details solutions for integration problems in private, community, and public clouds—especially problems with multi-tenant SaaS applications. Most enterprises are migrating to the cloud gradually rather than at one go. The transitional phase of mixed cloud and on-premises applications presents thorny problems for IT management. Waschke shows the reader how to normalize the performance and capacity measurements of concurrent traditional and cloud resources.
Hub Cities in the Knowledge EconomySeaports, Airports, BrainportsRoutledge
With this book, managers and decision makers are given the tools to make more informed decisions about big data purchasing initiatives. Big Data Analytics: A Practical Guide for Managers not only supplies descriptions of common tools, but also surveys the various products and vendors that supply the big data market.Comparing and contrasting the dif
The 4th edition of this popular Handbook continues to provide an easy-to-use guide to the many exciting new developments in the field of optical fiber data communications. With 90% new content, this edition contains all new material describing the transformation of the modern data communications network, both within the data center and over extended distances between data centers, along with best practices for the design of highly virtualized, converged, energy efficient, secure, and flattened network infrastructures. Key topics include networks for cloud computing, software defined networking, integrated and embedded networking appliances, and low latency networks for financial trading or other time-sensitive applications. Network architectures from the leading vendors are outlined (including Smart Analytic Solutions, Qfabric, FabricPath, and Exadata) as well as the latest revisions to industry standards for interoperable networks, including lossless Ethernet, 16G Fiber Channel, RoCE, FCoE, TRILL, IEEE 802.1Qbg, and more. Written by experts from IBM, HP, Dell, Cisco, Ciena, and Sun/ Oracle Case studies and 'How to...' demonstrations on a wide range of topics, including Optical Ethernet, next generation Internet, RDMA and Fiber Channel over Ethernet Quick reference tables of all the key optical network parameters for protocols like ESCON, FICON, and SONET/ATM and a glossary of technical terms and acronyms Infrastructure makes worlds. Software coordinates labor. Logistics governs movement.

These pillars of contemporary capitalism correspond with the materiality of digital communication systems on a planetary scale. Ned Rossiter theorizes the force of logistical media to discern how subjectivity and labor, economy and society are tied to the logistical imaginary of seamless interoperability. Contingency haunts logistical power. Technologies of capture are prone to infrastructural breakdown, sabotage, and failure. Strategies of evasion, anonymity, and disruption unsettle regimes of calculation and containment. We live in a computational age where media, again, disappear into the background as infrastructure. Software, Infrastructure, Labor intercuts transdisciplinary theoretical reflection with empirical encounters ranging from the Cold War legacy of cybernetics, shipping ports in China and Greece, the territoriality of data centers, video game design, and scrap metal economies in the e-waste industry. Rossiter argues that infrastructural ruins serve as resources for the collective design of blueprints and prototypes demanded of radical politics today.

Implementing energy-efficient CPUs and peripherals as well as reducing resource consumption have become emerging trends in computing. As computers increase in speed and power, their energy issues become more and more prevalent. The need to develop and promote environmentally friendly computer technologies and systems has also come to the forefront

Web 2.0 and Beyond: Principles and Technologies draws on the author's iceberg model of Web 2.0, which places the social Web at the tip of the iceberg underpinned by a framework of technologies and ideas. The author incorporates research from a range of areas, including business, economics, information science, law, media studies, psychology, social informatics and sociology. This multidisciplinary perspective illustrates not only the wide implications of computing but also how other areas interpret what computer science is doing. After an introductory chapter, the book is divided into three sections. The first one discusses the underlying ideas and principles, including user-generated content, the architecture of participation, data on an epic scale, harnessing the power of the crowd, openness and the network effect and Web topology. The second section chronologically covers the main types of Web 2.0 services—blogs, wikis, social networks, media sharing sites, social bookmarking and microblogging. Each chapter in this section looks at how the service is used, how it was developed and the technology involved, important research themes and findings from the literature. The final section presents the technologies and standards that underpin the operation of Web 2.0 and goes beyond this to explore such topics as the Semantic Web, cloud computing and Web Science. Suitable for nonexperts, students and computer scientists, this book provides an accessible and engaging explanation of Web 2.0 and its wider context yet is still grounded in the rigour of computer science. It takes readers through all aspects of Web 2.0, from the development of technologies to current services.

This book presents innovative and high-quality research on the implementation of conceptual frameworks, strategies, techniques, methodologies, informatics platforms and models for developing advanced knowledge-based systems and their application in different fields, including Agriculture, Education, Automotive, Electrical Industry, Business Services, Food Manufacturing, Energy Services, Medicine and others. Knowledge-based technologies employ artificial intelligence methods to heuristically address problems that cannot be solved by means of formal techniques. These technologies draw on standard and novel approaches from various disciplines within Computer Science, including Knowledge Engineering, Natural Language Processing, Decision Support Systems, Artificial Intelligence, Databases, Software Engineering, etc. As a combination of different fields of Artificial Intelligence, the area of Knowledge-Based Systems applies knowledge representation, case-based reasoning, neural networks, Semantic Web and TICs used in different domains. The book offers a valuable

resource for PhD students, Master's and undergraduate students of Information Technology (IT)-related degrees such as Computer Science, Information Systems and Electronic Engineering.

This book describes the use of free air cooling to improve the efficiency of, and cooling of, equipment for use in telecom infrastructures. Discussed at length is the cooling of communication installation rooms such as data centers or base stations, and this is intended as a valuable tool for the people designing and manufacturing key parts of communication networks. This book provides an introduction to current cooling methods used for energy reduction, and also compares present cooling methods in use in the field. The qualification methods and standard reliability assessments are reviewed, and their inability to assess the risks of free air cooling is discussed. The method of identifying the risks associated with free air cooling on equipment performance and reliability is introduced. A novel method of assessment for free air cooling is also proposed that utilizes prognostics and health management (PHM). This book also: Describes how the implementation of free air cooling can save energy for cooling within the telecommunications infrastructure. Analyzes the potential risks and failures of mechanisms possible in the implementation of free air cooling, which benefits manufacturers and equipment designers. Presents prognostics-based assessments to identify and mitigate the risks of telecommunications equipment under free air cooling conditions, which can provide the early warning of equipment failures at operation stage without disturbing the data centers' service. Optimum Cooling for Data Centers is an ideal book for researchers and engineers interested in designing and manufacturing equipment for use in telecom infrastructures. Please click here for information on Set 1: Thermal Packaging Techniques Thermal and mechanical packaging -- the enabling technologies for the physical implementation of electronic systems -- are responsible for much of the progress in miniaturization, reliability, and functional density achieved by electronic, microelectronic, and nanoelectronic products during the past 50 years. The inherent inefficiency of electronic devices and their sensitivity to heat have placed thermal packaging on the critical path of nearly every product development effort in traditional, as well as emerging, electronic product categories. Successful thermal packaging is the key differentiator in electronic products, as diverse as supercomputers and cell phones, and continues to be of pivotal importance in the refinement of traditional products and in the development of products for new applications. The Encyclopedia of Thermal Packaging, compiled in four multi-volume sets (Set 1: Thermal Packaging Techniques, Set 2: Thermal Packaging Tools, Set 3: Thermal Packaging Applications, and Set 4: Thermal Packaging Configurations) will provide a comprehensive, one-stop treatment of the techniques, tools, applications, and configurations of electronic thermal packaging. Each of the author-written sets presents the accumulated wisdom and shared perspectives of a few luminaries in the thermal management of electronics. Set 2: Thermal Packaging Tools The second set in the encyclopedia, Thermal Packaging Tools, includes volumes dedicated to thermal design of data centers, techniques and models for the design and optimization of heat sinks, the development and use of reduced-order "compact" thermal models of electronic components, a database of critical material thermal properties, and a comprehensive exploration of thermally-informed electronic design. The numerical and analytical techniques described in these volumes are among the primary tools used by thermal packaging practitioners and researchers to accelerate product and system development and achieve "correct by design" thermal packaging solutions. The four sets in the Encyclopedia of Thermal Packaging will provide the novice and student with a complete reference for a quick ascent on the thermal packaging "learning curve," the practitioner with a validated set of techniques and tools to face every challenge, and researchers with a clear definition of the state-of-the-art and emerging needs to guide their future efforts. This encyclopedia will, thus, be of great interest to packaging engineers, electronic product development engineers, and product managers, as well as to

researchers in thermal management of electronic and photonic components and systems, and most beneficial to undergraduate and graduate students studying mechanical, electrical, and electronic engineering. Foreword Foreword (English) (42 KB) Foreword (Japanese) (342 KB) Please click here for information on Set 1: Thermal Packaging Techniques Thermal and mechanical packaging -- the enabling technologies for the physical implementation of electronic systems -- are responsible for much of the progress in miniaturization, reliability, and functional density achieved by electronic, microelectronic, and nanoelectronic products during the past 50 years. The inherent inefficiency of electronic devices and their sensitivity to heat have placed thermal packaging on the critical path of nearly e

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