The Policy Driven Data Center With Aci Architecture Concepts And Methodology Networking Technology

Discover how to simplify your data center architecture, reduces costs, and improve speed and agility with Cisco UCS at your side About This Book Learn how to reduce equipment and operating costs, consolidate resources, and automate data center processes Eliminate manual, time-consuming tasks that were traditionally required to connect servers in data centers A practical hands-on guide that will help you to deploy servers and application stacks with ease Who This Book Is For This book is for system, network, and storage administrators who are responsible for Cisco UCS deployments. You need to have basic knowledge of server architecture, network, and storage technologies. What You Will Learn Set up your Lab using Cisco UCS Emulator Configure Cisco UCS, LAN, and SAN connectivity Create and manage Service profiles Perform various tasks using UCS Backup and restore Cisco UCS configuration Test various Cisco UCS scenarios Manage and automate multiple domains In Detail Cisco Unified Computer System (UCS) is a powerful solution for modern data centers and is responsible for increasing efficiency and reducing costs. This hands-on guide will take you through deployment in Cisco UCS. Using real-world examples of configuring and deploying Cisco UCS components, we'll prepare you for the practical deployments of Cisco UCS data center solutions. If you want to develop and enhance your hands-on skills with Cisco UCS solutions, this book is certainly for you. We start by showing you the Cisco UCS equipment options then introduce Cisco UCS Emulator so you can learn and practice deploying Cisco UCS components. We'll also introduce you to all the areas of UCS solutions through practical configuration examples. Moving on, you'll explore the Cisco UCS Manager, which is the centralized management interface for Cisco UCS. Once you get to know UCS Manager, you'll dive deeper into configuring LAN, SAN, identity pools, resource pools, and service profiles for the servers. You'll also get hands-on with administration topics including backup, restore, user's roles, and high availability cluster configuration. Finally, you will learn about virtualized networking, third-party integration tools, and testing failure scenarios. By the end of this book, you'll know everything you need to know to rapidly grow Cisco UCS deployments in the real world. Style and approach This hands-on book takes a tutorial-based approach to help you understand the practical methodologies and deployment of Cisco UCS components.

The inside guide to the next generation of data storage technology VMware Software-Defined Storage, A Guide to the Policy Driven, Software-Defined Storage Era presents the most in-depth look at VMware's next-generation storage technology to help solutions architects and operational teams maximize quality storage design. Written by a double VMware Certified Design Expert, this book delves into the design factors and capabilities of Virtual SAN and Virtual Volumes to provide a uniquely detailed examination of the software-defined storage model. Storage-as-a-Service (STaaS) is discussed in terms of deployment through VMware technology, with insight into the provisioning of storage resources and operational management, while legacy storage and storage protocol concepts provide context and demonstrate how Virtual SAN and Virtual Volumes are meeting traditional challenges. The discussion on architecture emphasizes the economies of storage alongside specific design factors for next-

generation VMware based storage solutions, and is followed by an example in which a solution is created based on the preferred option identified from a selection of cross-site design options. Storage hardware lifecycle management is an ongoing challenge for IT organizations and service providers. VMware is addressing these challenges through the software-defined storage model and Virtual SAN and Virtual Volumes technologies; this book provides unprecedented detail and expert guidance on the future of storage. Understand the architectural design factors of VMware-based storage Learn best practices for Virtual SAN stretched architecture implementation Deploy STaaS through vRealize Automation and vRealize Orchestrator Meet traditional storage challenges with next-generation storage technology Virtual SAN and Virtual Volumes are leading the way in efficiency, automation, and simplification, while maintaining enterprise-class features and performance. As organizations around the world are looking to cut costs without sacrificing performance, availability, or scalability, VMware-based next-generation storage solutions are the ideal platform for tomorrow's virtual infrastructure. VMware Software-Defined Storage provides detailed, practical guidance on the model that is set to transform all aspects of vSphere data center storage.

For more than 40 years, Computerworld has been the leading source of technology news and information for IT influencers worldwide. Computerworld's award-winning Web site (Computerworld.com), twice-monthly publication, focused conference series and custom research form the hub of the world's largest global IT media network. Software Networks describe new concepts for the Internets next generation. This architecture is based on virtual networking using Cloud and datacenter facilities. The main problems to be dealt with are the placement of virtual resources for opening a new network on the fly, and the urbanization of virtual resources implemented on physical network equipment. The digital architecture also deals with mechanisms capable of automatically controlling the placement of all virtual resources within the physical network. This book describes how to create and delete virtual networks on the fly. Indeed, the system is able to create any new network with any kind of virtual resource (e.g. switches, routers, LSRs, optical paths, firewalls, SIP-based servers, devices, servers, access points, etc.). Software Networks shows how this architecture is compatible with new advances in SDN (Software Defined Networking), new high-speed transport protocols such as TRILL (Transparent Interconnection of Lots of Links) and LISP (Locator/Identifier Separation Protocol), NGN, IMS, new generation Wi-Fi, and 4G/5G networks. Finally, the author introduces Clouds of security and the virtualization of secure elements (smartcards) that could certainly transform how to secure the Internet. For this second edition, the author addresses in five new chapters the importance of open source software for networks, mobile edge computing, fog networking, tactile internet – a network environment allowing remote access, and security – the use of Cloud of security, secure elements and the emergence of the blockchain.

The complete guide to provisioning and managing cloud-based Infrastructure as a Service (IaaS) data center solutions Cloud computing will revolutionize the way IT resources are deployed, configured, and managed for years to come. Service providers and customers each stand to realize tremendous value from this paradigm shift—if they can take advantage of it. Cloud Computing brings together the realistic, start-to-finish guidance they need to plan, implement, and manage cloud solution architectures for

tomorrow's virtualized data centers. It introduces cloud "newcomers" to essential concepts, and offers experienced operations professionals detailed guidance on delivering Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). This book's replicable solutions and fully-tested best practices will help enterprises, service providers, consultants, and Cisco partners meet the challenge of provisioning end-to-end cloud infrastructures. Drawing on extensive experience working with leading cloud vendors and integrators, the authors present detailed operations workflow examples, proven techniques for operating cloud-based network, compute, and storage infrastructure; a comprehensive management reference architecture; and a complete case study demonstrating rapid, lower-cost solutions design. Cloud Computing will be an indispensable resource for all network/IT professionals and managers involved with planning, implementing, or managing the next generation of cloud computing services. Venkata (Josh) Josyula, Ph.D., CCIE® No. 13518 is a Distinguished Services Engineer in Cisco Services Technology Group (CSTG) and advises Cisco customers on OSS/BSS architecture and solutions. Malcolm Orr, Solutions Architect for Cisco's Services Technology Solutions, advises telecoms and enterprise clients on architecting, building, and operating OSS/BSS and cloud management stacks. He is Cisco's lead architect for several Tier 1 public cloud projects. Greg Page has spent the last eleven years with Cisco in technical consulting roles relating to data center architecture/technology and service provider security. He is now exclusively focused on developing cloud/IaaS solutions with service providers and systems integrator partners. · Review the key concepts needed to successfully deploy clouds and cloud-based services · Transition common enterprise design patterns and use cases to the cloud · Master architectural principles and infrastructure designs for "real-time" managed IT services · Understand the Cisco approach to cloud-related technologies, systems, and services · Develop a cloud management architecture using ITIL, TMF, and ITU-TMN standards · Implement best practices for cloud service provisioning, activation, and management · Automate cloud infrastructure to simplify service delivery, monitoring, and assurance · Choose and implement the right billing/chargeback approaches for your business · Design and build IaaS services, from start to finish · Manage the unique capacity challenges associated with sporadic, real-time demand · Provide a consistent and optimal cloud user experience This book is part of the Networking Technology Series from Cisco Press®, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers. Category: Cloud Computing Covers: Virtualized Data Centers

The Policy Driven Data Center with ACIArchitecture, Concepts, and MethodologyCisco Press

Using the policy driven data center approach, networking professionals can make their data center topologies faster to configure and more portable. They can also build cloud infrastructure faster than before. All of this can be achieved by using REST and python together with the latest Cisco technology called Application Centric Infrastructure (ACI). The Policy Driven Data Center with ACI helps Architects, IT administrators, Network Administrators and Engineers to build and troubleshoot multipurpose cloud architectures. Cisco data center experts Lucien Avramov and Maurizio Portolani thoroughly explain the architecture, concepts, and methodology of the policy driven

data center. The authors cover the key technology concepts, the tools for modern data centers including python scripting and REST, the design consideration and methodology of modern fabrics including VXLAN-based forwarding, the policy model theory and concepts, how to build a multi-hypervisor and bare-metal infrastructure including OpenStack, the service integration, and advanced telemetry capabilities for troubleshooting. The book concludes by discussing universal data center switch architecture concepts in order to clearly understand switching concepts and the newer trends in the Nexus 9000 product portfolio. Drawing on their extensive experience in enterprise engagements, the authors present effective solutions for virtualized data centers, high performance computing, ultra-low latency environments, and large-scale data centers. In addition to discussing relevant concepts and methodologies, the authors address design considerations associated with hardware, topologies, automation, and scalability. Technical professionals will find invaluable guidance on migrating current data center environments to a policy driven data center.

In large-scaled and distributed systems, like multi-tier storage systems and cloud data centers, resource sharing among workloads brings multiple benefits while introducing many performance challenges. The key to effective workload multiplexing is accurate workload prediction. This thesis focuses on how to capture the salient characteristics of the real-world workloads to develop workload prediction methods and to drive scheduling and resource allocation policies, in order to achieve efficient and in-time resource isolation among applications. For a multi-tier storage system, high-priority user work is often multiplexed with low-priority background work. This brings the challenge of how to strike a balance between maintaining the user performance and maximizing the amount of finished background work. In this thesis, we propose two resource isolation policies based on different workload prediction methods: one is a Markovian model-based and the other is a neural networks-based. These policies aim at, via workload prediction, discovering the opportune time to schedule background work with minimum impact on user performance. Trace-driven simulations verify the efficiency of the two proposed resource isolation policies. The Markovian model-based policy successfully schedules the background work at the appropriate periods with small impact on the user performance. The neural networks-based policy adaptively schedules user and background work, resulting in meeting both performance requirements consistently. This thesis also proposes an accurate while efficient neural networks-based prediction method for data center usage series, called PRACTISE. Different from the traditional neural networks for time series prediction, PRACTISE selects the most informative features from the past observations of the time series itself. Testing on a large set of usage series in production data centers illustrates the accuracy (e.g., prediction error) and efficiency (e.g., time cost) of PRACTISE. The superiority of the usage prediction also allows a proactive resource management in the highly virtualized cloud data centers. In this thesis, we analyze on the performance tickets in the cloud data centers, and propose an active sizing algorithm, named ATM, that predicts the usage workloads and re-allocates capacity to workloads to avoid VM performance tickets. Moreover, driven by cheap prediction of usage tails, we also present TailGuard in this thesis, which dynamically clones VMs among co-located boxes, in order to efficiently reduce the performance violations of physical boxes in cloud data centers.

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.

For more than 20 years, Network World has been the premier provider of information, intelligence and insight for network and IT executives responsible for the digital nervous systems of large organizations. Readers are responsible for designing, implementing and managing the voice, data and video systems their companies use to support everything from business critical applications to employee collaboration and electronic commerce.

This volume contains the proceedings of CloudCom 2009, the First Inter- tional Conference on Cloud Computing. The conference was held in Beijing, China, during December 1–4, 2009, and was the ?rst in a series initiated by the Cloud Computing Association (www.cloudcom.org). The Cloud Computing Association was founded in 2009 by Chunming Rong, Martin Gilje Jaatun, and Frode Eika Sandnes. This ?rst conference was organized by the Beijing Ji- tong University, Chinese Institute of Electronics, and Wuhan University, and co-organized by Huazhong University of Science and Technology, South China Normal University, and Sun Yat-sen University. Ever since the inception of the Internet, a "Cloud" has been used as a metaphor for a network-accessible infrastructure (e.g., data storage, computing hardware, or entire networks) which is hidden from users. To some, the concept of cloud computing may seem like a throwback to the days of big mainframe computers, but we believe that cloud computing makes data truly mobile, - lowing a user to access services anywhere, anytime, with any Internet browser. In cloud computing, IT-related capabilities are provided as services, accessible without requiring control of, or even knowledge of, the underlying technology. Cloud computing provides dynamic scalability of services and computing power, and although many mature technologies are used as components in cloud c- puting, there are still many unresolved and open problems.

This IBM® Redbooks® publication is an IBM and Cisco collaboration that articulates how IBM and Cisco can bring the benefits of their respective companies to the modern data center. It documents the architectures, solutions, and benefits that can be achieved by implementing a data center based on IBM server, storage, and integrated systems, with the broader Cisco network. We describe how to design a state-of-the art data center and networking infrastructure combining Cisco and IBM solutions. The objective is to provide a reference guide for customers looking to build an infrastructure that is optimized for virtualization, is highly available, is interoperable, and is efficient in terms of power and space consumption. It will explain the technologies used to build the infrastructure, provide use cases, and give guidance on deployments.

Use ACI fabrics to drive unprecedented value from your data center environment With the Cisco Application Centric Infrastructure (ACI) software-defined networking platform, you can achieve dramatic improvements in data center performance, redundancy, security, visibility, efficiency, and agility. In Deploying ACI, three leading Cisco experts introduce this breakthrough platform, and walk network professionals through all facets of design, deployment, and operation. The authors demonstrate how ACI changes data center networking, security, and management; and offer multiple field-proven configurations. Deploying ACI is organized to follow the key decision points associated with implementing data center network fabrics. After a practical introduction to ACI concepts and design, the authors

show how to bring your fabric online, integrate virtualization and external connections, and efficiently manage your ACI network. You'll master new techniques for improving visibility, control, and availability; managing multitenancy; and seamlessly inserting service devices into application data flows. The authors conclude with expert advice for troubleshooting and automation, helping you deliver data center services with unprecedented efficiency. Understand the problems ACI solves,and how it solves them Design your ACI fabric, build it, and interface with devices to bring it to life Integrate virtualization technologieswith your ACI fabric Perform networking within an ACI fabric (and understand how ACI changes data center networking) Connect external networks and devices at Layer 2/Layer 3 levels Coherently manage unified ACI networks with tenants and application policies Migrate to granular policies based on applications and their functions Establish multitenancy, and evolve networking, security, and services to support it Integrate L4–7 services: device types, design scenarios, and implementation Use multisite designs to meet rigorous requirements for redundancy and business continuity Troubleshoot and monitor ACI fabrics Improve operational efficiency through automation and programmability

As organizations drive to transform and virtualize their IT infrastructures to reduce costs, and manage risk, networking is pivotal to success. Optimizing network performance, availability, adaptability, security, and cost is essential to achieving the maximum benefit from your infrastructure. In this IBM® Redbooks® publication, we address the requirements: Expertise to plan and design networks with holistic consideration of servers, storage, application performance and manageability Networking solutions that enable investment protection with performance and cost options that match your environment Technology and expertise to design and implement and manage network security and resiliency Robust network management software for integrated, simplified management that lowers operating costs of complex networks IBM and Brocade have entered into an agreement to provide expanded network technology choices with the new IBM b-type Ethernet Switches and Routers, to provide an integrated end-to-end resiliency and security framework. Combined with the IBM vast data center design experience and the Brocade networking expertise, this portfolio represents the ideal convergence of strength and intelligence. For organizations striving to transform and virtualize their IT infrastructure, such a combination can help you reduce costs, manage risks, and prepare for the future. This book is meant to be used along with "IBM b-type Data Center Networking: Design and Best Practices Introduction," SG24-7786.

Make the most of software-defined data centers with revolutionary VMware technologies About This Book Learn how you can automate your data center operations and deploy and manage applications and services across your public, private, and hybrid infrastructure in minutes Drive great business results with cost-effective solutions without compromising on ease, security, and controls Transform your business processes and operations in a way that delivers any application, anywhere, with complete peace of mind Who This Book Is For If you are an IT professional or VMware administrator who virtualizes data centers and IT infrastructures, this book is for you. Developers and DevOps engineers who deploy applications and services would also find this book useful. Data center architects and those at the CXO level who make decisions will appreciate the value in the content. What You Will Learn Understand and optimize end-to-end processes in your data center Translate IT processes and business needs into a technical design Apply and create vRO workflow automation functionalities to services Deploy NSX in a virtual environment Technically accomplish DevOps

offerings Set up and use vROPs to master the SDDC resource demands Troubleshoot all the components of SDDC In Detail VMware offers the industry-leading software-defined data center (SDDC) architecture that combines compute, storage, networking, and management offerings into a single unified platform. This book uses the most up-to-date, cutting-edge VMware products to help you deliver a complete unified hybrid cloud experience within your infrastructure. It will help you build a unified hybrid cloud based on SDDC architecture and practices to deliver a fully virtualized infrastructure with cost-effective IT outcomes. In the process, you will use some of the most advanced VMware products such as VSphere, VCloud, and NSX. You will learn how to use vSphere virtualization in a software-defined approach, which will help you to achieve a fully-virtualized infrastructure and to extend this infrastructure for compute, network, and storage-related data center services. You will also learn how to use EVO:RAIL. Next, you will see how to provision applications and IT services on private clouds or IaaS with seamless accessibility and mobility across the hybrid environment. This book will ensure you develop an SDDC approach for your datacenter that fulfills your organization's needs and tremendously boosts your agility and flexibility. It will also teach you how to draft, design, and deploy toolsets and software to automate your datacenter and speed up IT delivery to meet your lines of businesses demands. At the end, you will build unified hybrid clouds that dramatically boost your IT outcomes. Style and approach With the ever-changing nature of businesses and enterprises, having the capability to navigate through the complexities is of utmost importance. This book takes an approach that combines industry expertise with revolutionary VMware products to deliver a complete SDDC experience through practical examples and techniques, with proven cost-effective benefits.

When the experienced TBY team landed in Muscat in September 2019 to start its seventh annual research on the Sultanate's economy, it could have never imagined the uniqueness of the times ahead. Early 2020 saw the passing away of the Father of the Nation, His Majesty Late Sultan Qaboos bin Said, and the appointment of the new leader, His Majesty Sultan Haitham bin Tariq. This was thought to be Oman's defining event in 2020, but shortly after, the COVID-19 outbreak touched every corner of the world, and oil prices continuously sunk to record lows. No doubt it is a trying time, but we see this 2020 edition of The Business Year: Oman as ushering a new era for the Sultanate. With a refreshed, forward-looking perspective, this 260-page publication analyzes how the business community is embracing innovation and technology to create a competitive, diversified economy.

Master Cisco's ACI and become an expert NOW! About This Video This course will help you get from zero to hero and master the policy-driven Data Center approach that ACI offers ACI involves a big learning curve and you'll learn to change your traditional network design mentality, which will be crucial to mastering ACI We will work with ACI APIC version 3.x. which provides the

current SDN feature set you need to perform all data center functions and requirements In Detail Automation, objects, and policies are replacing traditional networks as we know them. North-to-South or East-to-West traffic flows-do you know the difference between the two? Don't worry if you don't: this course will remedy that! Traditional campus networks are static, and won't change much because they can't scale up. Data centers are not meant to be static. Today's Data Center architecture requirements are: scalability, geo-redundancy, security, multi-tenancy, and speed! Data center traffic flow should be highly available and predictable. As the demand for talented ACI engineers and architects is rapidly increasing, knowing the foundational aspects of SDN-based architectures and being able to implement and support them are crucial for your career development. This fast-paced course uses a whiteboard-based approach with hand written explanations. We start with an introduction to fabric data center designs, Spine and Leaf architectures, and ACI. We then start to implement them and deploy a fabric from the ground up. Then we build a multi-tenant environment. After completing this video training course, you will have gained a solid understanding of how to administer an Application Centric Infrastructure. This IBM® Redbooks® publication is a refresh of IBM Technical Computing Clouds, SG24-8144, Enhance Inbound and Outbound Marketing with a Trusted Single View of the Customer, SG24-8173, and IBM Platform Computing Integration Solutions, SG24-8081, with a focus on High Performance and Technical Computing on IBM Power SystemsTM. This book describes synergies across the IBM product portfolio by using case scenarios and showing solutions such as IBM SpectrumTM Scale (formerly GPFSTM). This book also reflects and documents the IBM Platform Computing Cloud Services as part of IBM Platform Symphony® for analytics workloads and IBM Platform LSF® (with new features, such as a Hadoop connector, a MapReduce accelerator, and dynamic cluster) for job scheduling. Both products are used to help customers schedule and analyze large amounts of data for business productivity and competitive advantages. This book is targeted at technical professionals (consultants, technical support staff, IT Architects, and IT Specialists) that are responsible for delivering cost-effective cloud services and big data solutions on IBM Power Systems to uncover insights among client data so that they can take actions to optimize business results, product development, and scientific discoveries.

This dissertation, "Load-balanced Switch Design and Data Center Networking" by Chunzhi, He, ???, was obtained from The University of Hong Kong (Pokfulam, Hong Kong) and is being sold pursuant to Creative Commons: Attribution 3.0 Hong Kong License. The content of this dissertation has not been altered in any way. We have altered the formatting in order to facilitate the ease of printing and reading of the dissertation. All rights not granted by the above license are retained by the author. Abstract: High-speed routers and high-performance data centers share a common system-level architecture in which multiple processing nodes are connected by an interconnection network for high-speed

communications. Load balancing is an important technique for maximizing throughput and minimizing delay of the interconnection network. In this thesis, efficient load balancing schemes are designed and analyzed for next-generation routers and data centers. In high-speed router design, two preferred switch architectures are input-queued switch and load-balanced switch. In an input-queued switch, time-domain load balancing can be carried out by an iterative algorithm that schedules packets for sending in different time slots. The complexity of an iterative algorithm increases rapidly with the number of scheduling iterations. To address this problem, a single-iteration scheduling algorithm called D-LQF is designed, in which exhaustive service policy is adopted for reusing the matched input-output pairs in the previous time slots to grow the match size. Unlike an input-queued switch, a load-balanced switch consists of two stages of crossbar switch fabrics, where load balancing is carried out in both time and space domains. Among various load-balanced switches, the feedback-based switch gives the best delay-throughput performance. In this thesis, the feedback-based switch is enhanced in three aspects. Firstly, we focus on reducing its switch fabric complexity. Instead of using crossbars, a dual-banyan network is proposed. The complexity of dual-banyan can be further reduced by merging the two banyans to form a Clos network, resulting in a Clos-banyan network. Secondly, we target at improving the delay performance of the feedback-based switch. A Clos-feedback switch architecture is devised where each switch module in the Clos network is a small feedback-based switch. With application-flow based load balancing, packet order is ensured and the average packet delay is reduced from $O(N)$ to $O(n)$, where N and n are the switch and switch module sizes, respectively. Thirdly, we extend the feedback-based switch to support multicast traffic. Based on the notion of pointer-based multicast VOQ, an efficient multicast scheduling algorithm with packet replication at the middle-stage ports only is proposed. In order to provide close-to-100% throughput for any admissible multicast traffic patterns, a three-stage implementation of feedback-based switch is also designed. In designing load balancing schemes for data centers, we focus on the most popular fat-tree based data centers. Notably, packet-based load balancing is widely considered infeasible for data centers. This is because the associated packet out-of-order problem will cause unnecessary TCP fast retransmits, and as a result, severely undermine TCP performance. In this thesis, we show that if packet-based load balancing is performed properly, the packet out-of-order problem can be easily addressed by slightly increasing the number of duplicate ACKs required for triggering fast retransmit. Admittedly, in case of a real packet loss, the loss recovery time will be increased. But our simulation results show that such an increase is far less than the reduction in the network queueing delay (due to a better load-balanced network). As compared to a flow-based load balancing scheme, our packet-based scheme consistently provides significantly higher goodput and noticeably smaller

In-depth coverage of the computational and architectural facets of policy-based

networking written by a leader in the field

The book deals with the most recent technology of distributed computing. As Internet continues to grow and provide practical connectivity between users of computers it has become possible to consider use of computing resources which are far apart and connected by Wide Area Networks. Instead of using only local computing power it has become practical to access computing resources widely distributed. In some cases between different countries in other cases between different continents. This idea of using computer power is similar to the well known electric power utility technology. Hence the name of this distributed computing technology is the Grid Computing. Initially grid computing was used by technologically advanced scientific users. They used grid computing to experiment with large scale problems which required high performance computing facilities and collaborative work. In the next stage of development the grid computing technology has become effective and economically attractive for large and medium size commercial companies. It is expected that eventually the grid computing style of providing computing power will become universal reaching every user in industry and business. * Written by academic and industrial experts who have developed or used grid computing * Many proposed solutions have been tested in real life applications * Covers most essential and technically relevant issues in grid computing

Computer and Communication Networks, Second Edition, explains the modern technologies of networking and communications, preparing you to analyze and simulate complex networks, and to design cost-effective networks for emerging requirements. Offering uniquely balanced coverage of basic and advanced topics, it teaches through case studies, realistic examples and exercises, and intuitive illustrations. Nader F. Mir establishes a solid foundation in basic networking concepts; TCP/IP schemes; wireless and LTE networks; Internet applications, such as Web and e-mail; and network security. Then, he delves into both network analysis and advanced networking protocols, VoIP, cloud-based multimedia networking, SDN, and virtualized networks. In this new edition, Mir provides updated, practical, scenario-based information that many networking books lack, offering a uniquely effective blend of theory and implementation. Drawing on extensive field experience, he presents many contemporary applications and covers key topics that other texts overlook, including P2P and voice/video networking, SDN, information-centric networking, and modern router/switch design. Students, researchers, and networking professionals will find up-to-date, thorough coverage of Packet switching Internet protocols (including IPv6) Networking devices Links and link interfaces LANs, WANs, and Internetworking Multicast routing, and protocols Wide area wireless networks and LTE Transport and end-to-end protocols Network applications and management Network security Network queues and delay analysis Advanced router/switch architecture QoS and scheduling Tunneling, VPNs, and MPLS All-optical networks, WDM, and GMPLS Cloud computing and network virtualization Software defined networking (SDN) VoIP signaling Media exchange and voice/video compression Distributed/cloud-based multimedia networks Mobile ad hoc networks Wireless sensor networks Key features include More than three hundred fifty figures that simplify complex topics Numerous algorithms that summarize key networking protocols and equations Up-to-date case studies illuminating concepts and theory Approximately four hundred exercises and examples honed over Mir's twenty years of teaching networking

Bring the power of Microsoft Azure Hybrid Cloud technology to your datacenter. About This

Book Build and deploy software-defined infrastructures and deliver Azure-based IaaS and
Paas services in your datacenter Use Azure Stack to leverage your current infrastructure with
Microsoft Hybrid Cloud and get the best of both worlds Unlock greater levels of performance
and flexibility and save your organization money, time, and resources Who This Book Is For
The book is for administrators and architects who are planning to implement or administer a
hybrid cloud infrastructure using Microsoft Cloud Technology. This book is ideal for those who
are looking forward to implement and run a hybrid cloud infrastructure with PaaS, SaaS and
IaaS services. What You Will Learn Gain a clear understanding of Azure Stack design Set up
storage, network and compute services in Azure Stack Implement and run a hybrid cloud
infrastructure with PaaS, SaaS, and IaaS services Get an overview of the automation options
in Azure Stack Integrate Azure public services such as multi-factor authentication and Azure
AD with Azure Stack Learn about the services available in the future In Detail Azure Stack is all
about creating fewer gaps between on-premise and public cloud application deployment. Azure
Stack is the next logical evolution of Microsoft Cloud Services to create a true Hybrid Cloud-
ready application. This book provides an introduction to Microsoft Azure Stack and the Cloud
First Approach. Starting with an introduction to Microsoft Azure Stack Architecture, the book
will help you plan and deploy your Microsoft Azure Stack. Next, you will learn about the
Network and Storage option in Microsoft Azure Stack and you'll create your own private cloud
solution. Finally, you will understand how to integrate Public Cloud Services with Microsoft
Azure Stack and extend it using the 3rd Party Resource Provider. After reading the book, you
will have a good understanding of an end-to-end process for designing, implementing, offering,
and supporting cloud solutions for enterprises or service providers. Style and approach This
book is a practical guide to help you unlock a hybrid cloud stack using Azure Stack. Using a
straight forward and easy to implement approach, this book guides you through the basic
planning for a hybrid cloud stack, describes the infrastructure technologies Azure Stack is
based on, and explains how to deploy and administer an Azure Stack-based infrastructure.
Master the basics of data centers to build server farms that enhance your Web site
performance Learn design guidelines that show how to deploy server farms in highly available
and scalable environments Plan site performance capacity with discussions of server farm
architectures and their real-life applications to determine your system needs Today's market
demands that businesses have an Internet presence through which they can perform e-
commerce and customer support, and establish a presence that can attract and increase their
customer base. Underestimated hit ratios, compromised credit card records, perceived slow
Web site access, or the infamous "Object Not Found" alerts make the difference between a
successful online presence and one that is bound to fail. These challenges can be solved in
part with the use of data center technology. Data centers switch traffic based on information at
the Network, Transport, or Application layers. Content switches perform the "best server"
selection process to direct users' requests for a specific service to a server in a server farm.
The best server selection process takes into account both server load and availability, and the
existence and consistency of the requested content. Data Center Fundamentals helps you
understand the basic concepts behind the design and scaling of server farms using data center
and content switching technologies. It addresses the principles and concepts needed to take
on the most common challenges encountered during planning, implementing, and managing
Internet and intranet IP-based server farms. An in-depth analysis of the data center technology
with real-life scenarios make Data Center Fundamentals an ideal reference for understanding,
planning, and designing Web hosting and e-commerce environments.
Cloud computing has revolutionized computer systems, providing greater dynamism and
flexibility to a variety of operations. It can help businesses quickly and effectively adapt to
market changes, and helps promote users' continual access to vital information across
platforms and devices. Cloud Computing Advancements in Design, Implementation, and

Technologies outlines advancements in the state-of-the-art, standards, and practices of cloud computing, in an effort to identify emerging trends that will ultimately define the future of the cloud. A valuable reference for academics and practitioners alike, this title covers topics such as virtualization technology, utility computing, cloud application services (SaaS), grid computing, and services computing.

Financial markets are witnessing an unprecedented explosion in the availability of data, and the firms that survive will be able to leverage this information to increase their profit and expand their opportunities in a global world. Financial firms have two options: to build their own data centers or to outsource them to hosting services such as Google and Amazon 'cloud' services. While outsourcing data centers is a trend for small firms, it is not applicable to bigger firms who want more control over their huge amounts of data. Large firms thus build their own data centers. In such an environment, the CIO's ability is crucial to lead an effective data strategy to capture, process and connect data to all the relevant lines of business. At the core of this strategy lies the data center – the repository of all information. In recognition of the importance of information, firms are rushing to invest in data centers, but they are finding that just throwing technology at the problem is not good enough. Despite the investments, data centers prove frustrating in terms of inefficiencies and rising costs, directly cutting into the profitability of lines of business that they serve. While there are books that discuss the mechanics, hardware and technicalities of data centers, no book has yet made the connection between enterprise strategy and data center investment, design and management. This book is a solution driven book for management demonstrating how to leverage technology to manage the seemingly infinite amount of data available today. Each chapter offers cutting-edge management and technology solutions to effectively manage data through data centers. • Feature: Presents cutting-edge technology solutions not available in one place until now • Benefit: Saves time going to numerous websites, calling vendors, going to conferences • Feature: Includes step-by-step instructions on how to implement a data center strategy based on the author's recent success with Wachovia's data center • Benefit: Readers can follow these steps with confidence that they will work and not have to re-invent the wheel • Feature: Demonstrates how business and IT can be aligned in financial services • Benefit: Demonstrating this alignment is crucial for any proposal for IT related resources today

This book combines the three dimensions of technology, society and economy to explore the advent of today's cloud ecosystems as successors to older service ecosystems based on networks. Further, it describes the shifting of services to the cloud as a long-term trend that is still progressing rapidly.The book adopts a comprehensive perspective on the key success factors for the technology – compelling business models and ecosystems including private, public and national organizations. The authors explore the evolution of service ecosystems, describe the similarities and differences, and analyze the way they have created and changed industries. Lastly, based on the current status of cloud computing and related technologies like virtualization, the internet of things, fog computing, big data and analytics, cognitive computing and blockchain, the authors provide a revealing outlook on the possibilities of future technologies, the future of the internet, and the potential impacts on business and society.

???????????????????????? ?????2018???????? ???????????????????????????????????? ???????????Amazon????????? ?????TED???????????????????????? ?? ?????????????????????????????????? ???? ???????????????????????? ???????????????????????????? ?????????????????????????????????? ???????????????????????????????????? ???????????????????? ????????????????????????? ??????????????????????????????????????? ?? ???????????????????????????????? ?? ???????????????????????????????????? ??

?? ?? ???? ?? ????????????????????????? ??????????? ??????????????????????????????? ?????????????? ???????????? ?? ????????????? ?????????????PaGamO/BoniO???? ?????????????????? ??????????????? ????TEDxTaipei?????????? ??????
?? ??????? ?? ??? ?? ??????? ?? ?????????????????????????????????????……??TED??? ??? ???……?? ??????????????????????????? ??TED ??????????????????????????????????Nature? ???? ?????? Hans Rosling ?????????????????????? ????????????????WHO??????????UNICEF??????????????????????????????WEF???????? ??? 2005???????????????????????????Gapminder Foundation???????????????????????????????? ???????????????????????????????????????TED???????????3,500??? ???Fast Company??????????? ??? ?? 2017????????????????????????? ?????? Ola Rosling??????? Anna Rosling Rönnlund ???????? ?????????????????????????2010???????????????????????Trendalyzer?Google?????????Goog le??? ???? ??? ???????????????????????????? ?? ????????????????????????? ?? ???? ? ? ?????????? Chapter 1 ??????? ?????? ?????????????? ?????????? ???????? ?????????? ????????????? ?????? ????????????? Chapter 2 ??????? ????? ??????????????? ????????? ???????? ?????????? ?????? ???????????? ????????? Chapter 3 ??????? ?????????? ????????????????? ?????? ???????? ???????????? ????????????? Chapter 4 ??????? ?????? ???????? ?????? ??????????????? ?????4000???? ?????? ??? ??? ??????? Chapter 5 ??????? ????????? ?????? ????????????? ?80/20?? ????? ?????? Chapter 6 ??????? ????? ?????? ????? ???????? ??????? Chapter 7 ??????? ?????? ?????? ??????? ????????????? ??????? Chapter 8 ???????? ???????? ??????? ???????? ?????? ?????????? Chapter 9 ??????? ?????? ?????? ????? ??????? ????????? Chapter 10 ??????? ?????? ?????? ???????????? ??????????????? Chapter 11 ???????? ????????????? ????????? ????? ? ? ? ? ? ?

The complete guide to seamless anytime/anywhere networking with LISP In an era of ubiquitous clouds, virtualization, mobility, and the Internet of Things, information and resources must be accessible anytime, from anywhere. Connectivity to devices and workloads must be seamless even when people move, and their location must be fully independent of device identity. The Locator/ID Separation Protocol (LISP) makes all this possible. The LISP Network is the first comprehensive, in-depth guide to LISP concepts, architecture, techniques, behavior, and applications. Co-authored by LISP co-creator Dino Farinacci and Victor Moreno–co-developer of the Cisco LISP implementation–it will help you identify the opportunities and benefits of deploying LISP in any data center, campus and branch access, WAN edge, or service provider core network. This largely implementation-agnostic guide will be valuable to architects, engineers, consultants, technical sales professionals, and senior IT professionals in any largescale network environment. The authors show how LISP overcomes key problems in large-scale networking, thoroughly introduce its key applications, guide you through designing real-world solutions, and present detailed deployment case studies based on their pioneering

experience. · Understand LISP's core principles, history, motivation, and applications · Explore LISP's technical architecture, components, mechanisms, and workflows · Use LISP to seamlessly deliver diverse network services and enable major advances in data center connectivity · Improve mobility, network segmentation, and policy management · Leverage software-defined WANs (SD-WANs) to efficiently move traffic from access to data center · Evolve access networks to provide pervasive, mega-scale, high-density modern connectivity · Integrate comprehensive security into the networking control and data plane, and learn how LISP infrastructure is protected against attacks · Enforce access control policies, connection integrity, confidentiality for data in flight, and end-point anonymity · Discover how LISP mobility mechanisms anticipate tomorrow's application use cases

The emergence of the cloud as infrastructure: experts from a range of disciplines consider policy issues including reliability, privacy, consumer protection, national security, and copyright. Improve Manageability, Flexibility, Scalability, and Control with Hyperconverged Infrastructure Hyperconverged infrastructure (HCI) combines storage, compute, and networking in one unified system, managed locally or from the cloud. With HCI, you can leverage the cloud's simplicity, flexibility, and scalability without losing control or compromising your ability to scale. In Hyperconverged Infrastructure Data Centers, best-selling author Sam Halabi demystifies HCI technology, outlines its use cases, and compares solutions from a vendor-neutral perspective. He guides you through evaluation, planning, implementation, and management, helping you decide where HCI makes sense, and how to migrate legacy data centers without disrupting production systems. The author brings together all the HCI knowledge technical professionals and IT managers need, whether their background is in storage, compute, virtualization, switching/routing, automation, or public cloud platforms. He explores leading solutions including the Cisco HyperFlex platform, VMware vSAN, Nutanix Enterprise Cloud, Cisco Application-Centric Infrastructure (ACI), VMware's NSX, the open source OpenStack and Open vSwitch (OVS) / Open Virtual Network (OVN), and Cisco CloudCenter for multicloud management. As you explore discussions of automation, policy management, and other key HCI capabilities, you'll discover powerful new opportunities to improve control, security, agility, and performance. Understand and overcome key limits of traditional data center designs Discover improvements made possible by advances in compute, bus interconnect, virtualization, and software-defined storage Simplify rollouts, management, and integration with converged infrastructure (CI) based on the Cisco Unified Computing System (UCS) Explore HCI functionality, advanced capabilities, and benefits Evaluate key HCI applications, including DevOps, virtual desktops, ROBO, edge computing, Tier 1 enterprise applications, backup, and disaster recovery Simplify application deployment and policy setting by implementing a new model for provisioning, deployment, and management Plan, integrate, deploy, provision, manage, and optimize the Cisco HyperFlex hyperconverged infrastructure platform Assess alternatives such as VMware vSAN, Nutanix, open source OpenStack, and OVS/OVN, and compare architectural differences with HyperFlex Compare Cisco ACI (Application- Centric Infrastructure) and VMware NSX approaches to network automation, policies, and security This book is part of the Networking Technology Series from Cisco Press, which offers networking professionals valuable information for constructing efficient networks, understanding new technologies, and building successful careers.

This IBM® Redpaper publication provides an update to the original description of IBM Reference Architecture for Genomics. This paper expands the reference architecture to cover all of the major vertical areas of healthcare and life sciences industries, such as genomics, imaging, and clinical and translational research. The architecture was renamed IBM Reference Architecture for High Performance Data and AI in Healthcare and Life Sciences to reflect the fact that it incorporates key building blocks for high-performance computing (HPC) and software-defined storage, and that it supports an expanding infrastructure of leading industry

partners, platforms, and frameworks. The reference architecture defines a highly flexible, scalable, and cost-effective platform for accessing, managing, storing, sharing, integrating, and analyzing big data, which can be deployed on-premises, in the cloud, or as a hybrid of the two. IT organizations can use the reference architecture as a high-level guide for overcoming data management challenges and processing bottlenecks that are frequently encountered in personalized healthcare initiatives, and in compute-intensive and data-intensive biomedical workloads. This reference architecture also provides a framework and context for modern healthcare and life sciences institutions to adopt cutting-edge technologies, such as cognitive life sciences solutions, machine learning and deep learning, Spark for analytics, and cloud computing. To illustrate these points, this paper includes case studies describing how clients and IBM Business Partners alike used the reference architecture in the deployments of demanding infrastructures for precision medicine. This publication targets technical professionals (consultants, technical support staff, IT Architects, and IT Specialists) who are responsible for providing life sciences solutions and support.

This 2-volume set constitutes the thoroughly refereed post-conference proceedings of the 10th International Conference on Security and Privacy in Communication Networks, SecureComm 2014, held in Beijing, China, in September 2014. The 27 regular and 17 short papers presented were carefully reviewed. It also presents 22 papers accepted for four workshops (ATCS, SSS, SLSS, DAPRO) in conjunction with the conference, 6 doctoral symposium papers and 8 poster papers. The papers are grouped in the following topics: security and privacy in wired, wireless, mobile, hybrid, sensor, ad hoc networks; network intrusion detection and prevention, firewalls, packet filters; malware, and distributed denial of service; communication privacy and anonymity; network and internet forensics techniques; public key infrastructures, key management, credential management; secure routing, naming/addressing, network management; security and privacy in pervasive and ubiquitous computing; security & privacy for emerging technologies: VoIP, peer-to-peer and overlay network systems; security & isolation in data center networks; security & isolation in software defined networking.

Copyright: e8cf7ac4fa79ecc91b6d31bafd891301