

Cloud Computing Architecture Software Engineering Institute

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Architecting Cloud Computing Solutions IGI Global

As technology continues to evolve, the popularity of mobile computing has become inherent within today's society. With the majority of the population using some form of mobile device, it has become increasingly important to develop more efficient cloud platforms. Modern Software Engineering Methodologies for Mobile and Cloud Environments investigates emergent trends and research on innovative software platforms in mobile and cloud computing. Featuring state-of-the-art software engineering methods, as well as new techniques being utilized in the field, this book is a pivotal reference source for professionals, researchers, practitioners, and students interested in mobile and cloud environments.

Cloud Computing IGI Global

This important text provides a single point of reference for state-of-the-art cloud computing design and implementation techniques. The book examines cloud computing from the perspective of enterprise architecture, asking the question; how do we realize new business potential with our existing enterprises? Topics and features: with a Foreword by Thomas Erl; contains contributions from an international selection of preeminent experts; presents the state-of-the-art in enterprise architecture approaches with respect to cloud computing models, frameworks, technologies, and applications; discusses potential research directions, and technologies to facilitate the realization of emerging business models through enterprise architecture approaches; provides relevant theoretical frameworks, and the latest empirical research findings.

Heterogeneous Computing Architectures CRC Press

Do you need to learn about cloud computing architecture with Microsoft's Azure quickly? Read this book! It gives you just enough info on the big picture and is filled with key terminology so that you can join the discussion on cloud architecture.

Cloud Application Architectures PHI Learning Pvt. Ltd.

Cloud computing is a buzz-word in today's information technology (IT) that nobody can escape. But what is really behind it? There are many interpretations of this term, but no standardized or even

uniform definition. Instead, as a result of the multi-faceted viewpoints and the diverse interests expressed by the various stakeholders, cloud computing is perceived as a rather fuzzy concept. With this book, the authors deliver an overview of cloud computing architecture, services, and applications. Their aim is to bring readers up to date on this technology and thus to provide a common basis for discussion, new research, and novel application scenarios. They first introduce the foundation of cloud computing with its basic technologies, such as virtualization and Web services. After that they discuss the cloud architecture and its service modules. The following chapters then cover selected commercial cloud offerings (including Amazon Web Services and Google App Engine) and management tools, and present current related open-source developments (including Hadoop, Eucalyptus, and Open Cirrus™). Next, economic considerations (cost and business models) are discussed, and an evaluation of the cloud market situation is given. Finally, the appendix contains some practical examples of how to use cloud resources or cloud applications, and a glossary provides concise definitions of key terms. The authors' presentation does not require in-depth technical knowledge. It is equally intended as an introduction for students in software engineering, web technologies, or business development, for professional software developers or system architects, and for future-oriented decision-makers like top executives and managers.

Cloud Computing for Enterprise Architectures Springer Science & Business Media

Build enterprise-grade cloud-native systems and learn all about cloud-native architecture and design. This book provides extensive in-depth details of patterns, tools, techniques, and processes with plenty of examples. Cloud Native Architecture and Design begins by explaining the fundamentals of cloud-native architecture and services, what cloud principles and patterns to use, and details of designing a cloud-native element. The book progresses to cover the details of how IT systems can modernize to embrace cloud-native architecture, and also provides details of various enterprise assessment techniques to decide what systems can move and cannot move into the cloud. Architecting and designing a cloud-native system isn't possible without modernized software engineering principles, the culture of automation, and the culture of innovation. As such, this book covers the details of cloud-native software engineering methodologies, and process, and how to adopt an automated governance approach across enterprises with the adoption of artificial intelligence. Finally, you need your cloud-native applications to run efficiently; this section covers the details of containerization, orchestration, and virtualization in the public, private, and hybrid clouds. After reading this book, you will have familiarity with the many concepts related to cloud-native and understand how to design and develop a successful cloud-native application. Technologies and practices may change over time, but the book lays a strong foundation on which you can build successful cloud-native systems. What You Will Learn Discover cloud-native principles and patterns, and how you can leverage them to solve your business problems Gain the techniques and concepts you need to adapt to design a cloud-native application Use assessment techniques and tools for IT modernization Apply cloud-native engineering principles to the culture of automation and culture of innovation Harness the techniques and tools to run your cloud-native

applications and automate infrastructure Operate your cloud-native applications by using AI techniques and zero operation techniques Who This Book Is For Software architects, leaders, developers, engineers, project managers, and students.

SOFTWARE ENGINEERING, SECOND EDITION Pearson Education

"This book provides a theoretical and academic description of Cloud security issues, methods, tools and trends for developing secure software for Cloud services and applications"--Provided by publisher.

Advancements in Model-Driven Architecture in Software Engineering IGI Global

Cloud computing-accessing computing resources over the Internet-is rapidly changing the landscape of information technology. Its primary benefits compared to on-premise computing models are reduced costs and increased agility and scalability. Hence, cloud computing is receiving considerable interest among several stakeholders-businesses, the IT ind

The Enterprise Cloud Elsevier

Accelerating Business and Mission Success with Cloud Computing. Key Features A step-by-step guide that will practically guide you through implementing Cloud computing services effectively and efficiently. Learn to choose the most ideal Cloud service model, and adopt appropriate Cloud design considerations for your organization. Leverage Cloud computing methodologies to successfully develop a cost-effective Cloud environment successfully. **Book Description** Cloud adoption is a core component of digital transformation. Scaling the IT environment, making it resilient, and reducing costs are what organizations want. **Architecting Cloud Computing Solutions** presents and explains critical Cloud solution design considerations and technology decisions required to choose and deploy the right Cloud service and deployment models, based on your business and technology service requirements. This book starts with the fundamentals of cloud computing and its architectural concepts. It then walks you through Cloud service models (IaaS, PaaS, and SaaS), deployment models (public, private, community, and hybrid) and implementation options (Enterprise, MSP, and CSP) to explain and describe the key considerations and challenges organizations face during cloud migration. Later, this book delves into how to leverage DevOps, Cloud-Native, and Serverless architectures in your Cloud environment and presents industry best practices for scaling your Cloud environment. Finally, this book addresses (in depth) managing essential cloud technology service components such as data storage, security controls, and disaster recovery. By the end of this book, you will have mastered all the design considerations and operational trades required to adopt Cloud services, no matter which cloud service provider you choose. What you will learn **Manage changes in the digital transformation and cloud transition process** Design and build architectures that support specific business cases Design, modify, and aggregate baseline cloud architectures Familiarize yourself with cloud application security and cloud computing security threats Design and architect small, medium, and large cloud computing solutions Who this book is for If you are an IT Administrator, Cloud Architect, or a Solution Architect keen to benefit from cloud adoption for your organization, then this book is for you. Small business owners, managers, or consultants will also find this book useful. No prior knowledge of Cloud computing is needed.

Smart SOA Platforms in Cloud Computing Architectures Morgan Kaufmann

This book presents cutting-edge research, advanced techniques, and practical applications of the integration of Cloud Computing and Internet of Things (IoT). It explores the practical challenges associated with the development and deployment of Cloud Computing and IoT-based solutions, including security, privacy, and interoperability issues. It includes various case studies, including Smart Cities, Network Security, Healthcare,

Smart Urban Sensing, Agriculture, Mining, Railways, and Crime Investigations. It offers in-depth insights, developments, and practical applications, showcasing helpful tools and techniques in IoT and Cloud Computing. **Key Features** • Provide a comprehensive and accessible resource that covers a broad range of topics on the integration of Cloud Computing and IoT. • Shows how Cloud Computing and IoT are applied to various challenging situations. • Covers in-depth inference of Cloud Computing and IoT to real-world issues, which will assist the industrial sector in growth. • Includes discussion of how robust privacy solutions are important to enable effective integration between Cloud Computing and IoT-based applications. • Offers case studies and real-life examples from various sectors, including healthcare, agriculture, mining, smart transport, and underwater communication. The book is a comprehensive guide for professionals, researchers, and students interested in the latest Cloud Computing and IoT developments.

Security Engineering for Cloud Computing: Approaches and Tools Springer

"This book continues the very high standard we have come to expect from ServiceTech Press. The book provides well-explained vendor-agnostic patterns to the challenges of providing or using cloud solutions from PaaS to SaaS. The book is not only a great patterns reference, but also worth reading from cover to cover as the patterns are thought-provoking, drawing out points that you should consider and ask of a potential vendor if you're adopting a cloud solution." -- Phil Wilkins, Enterprise Integration Architect, Specsavers "Thomas Erl's text provides a unique and comprehensive perspective on cloud design patterns that is clearly and concisely explained for the technical professional and layman alike. It is an informative, knowledgeable, and powerful insight that may guide cloud experts in achieving extraordinary results based on extraordinary expertise identified in this text. I will use this text as a resource in future cloud designs and architectural considerations." -- Dr. Nancy M. Landreville, CEO/CISO, NML Computer Consulting **The Definitive Guide to Cloud Architecture and Design** Best-selling service technology author Thomas Erl has brought together the de facto catalog of design patterns for modern cloud-based architecture and solution design. More than two years in development, this book's 100+ patterns illustrate proven solutions to common cloud challenges and requirements. Its patterns are supported by rich, visual documentation, including 300+ diagrams. The authors address topics covering scalability, elasticity, reliability, resiliency, recovery, data management, storage, virtualization, monitoring, provisioning, administration, and much more. Readers will further find detailed coverage of cloud security, from networking and storage safeguards to identity systems, trust assurance, and auditing. This book's unprecedented technical depth makes it a must-have resource for every cloud technology architect, solution designer, developer, administrator, and manager. **Topic Areas** Enabling ubiquitous, on-demand, scalable network access to shared pools of configurable IT resources Optimizing multitenant environments to efficiently serve multiple unpredictable consumers Using elasticity best practices to scale IT resources transparently and automatically Ensuring runtime reliability, operational resiliency, and automated recovery from any failure Establishing resilient cloud architectures that act as pillars for enterprise cloud solutions Rapidly provisioning cloud storage devices, resources, and data with minimal management effort Enabling customers to configure and operate custom virtual networks in SaaS, PaaS, or IaaS environments Efficiently provisioning resources, monitoring runtimes, and handling day-to-day administration Implementing best-practice security controls for cloud service architectures and cloud storage Securing on-premise Internet access, external cloud connections, and scaled VMs Protecting cloud services against denial-of-service attacks and traffic hijacking Establishing cloud authentication gateways, federated cloud authentication, and cloud key management Providing trust attestation services to customers Monitoring and independently auditing cloud security Solving complex cloud design problems with compound super-patterns

Migrating Legacy Applications IGI Global

This book presents the latest research on Software Engineering Frameworks for the Cloud Computing Paradigm, drawn from an international selection of researchers and practitioners. The book offers both a discussion of relevant software engineering approaches and practical guidance on enterprise-wide software deployment in the cloud environment, together with real-world case studies. **Features:** presents the state of the art in software engineering approaches for developing

cloud-suitable applications; discusses the impact of the cloud computing paradigm on software engineering; offers guidance and best practices for students and practitioners; examines the stages of the software development lifecycle, with a focus on the requirements engineering and testing of cloud-based applications; reviews the efficiency and performance of cloud-based applications; explores feature-driven and cloud-aided software design; provides relevant theoretical frameworks, practical approaches and future research directions.

Software Reuse in the Emerging Cloud Computing Era "O'Reilly Media, Inc."

Cloud computing has become integrated into all sectors, from business to quotidian life. Since it has revolutionized modern computing, there is a need for updated research related to the architecture and frameworks necessary to maintain its efficiency. The Handbook of Research on End-to-End Cloud Computing Architecture Design provides architectural design and implementation studies on cloud computing from an end-to-end approach, including the latest industrial works and extensive research studies of cloud computing. This handbook enumerates deep dive and systemic studies of cloud computing from architecture to implementation. This book is a comprehensive publication ideal for programmers, IT professionals, students, researchers, and engineers.

Software Engineering Frameworks for the Cloud Computing Paradigm Springer Nature

Cloud computing has become a significant technology trend. Experts believe cloud computing is currently reshaping information technology and the IT marketplace. The advantages of using cloud computing include cost savings, speed to market, access to greater computing resources, high availability, and scalability. Handbook of Cloud Computing includes contributions from world experts in the field of cloud computing from academia, research laboratories and private industry. This book presents the systems, tools, and services of the leading providers of cloud computing; including Google, Yahoo, Amazon, IBM, and Microsoft. The basic concepts of cloud computing and cloud computing applications are also introduced. Current and future technologies applied in cloud computing are also discussed. Case studies, examples, and exercises are provided throughout. Handbook of Cloud Computing is intended for advanced-level students and researchers in computer science and electrical engineering as a reference book. This handbook is also beneficial to computer and system infrastructure designers, developers, business managers, entrepreneurs and investors within the cloud computing related industry.

Modern Software Engineering Methodologies for Mobile and Cloud Environments "O'Reilly Media, Inc."

This book focuses on the development and implementation of cloud-based, complex software that allows parallelism, fast processing, and real-time connectivity. Software engineering (SE) is the design, development, testing, and implementation of software applications, and this discipline is as well developed as the practice is well established whereas the Cloud Software Engineering (CSE) is the design, development, testing, and continuous delivery of service-oriented software systems and applications (Software as a Service Paradigm). However, with the emergence of the highly attractive cloud computing (CC) paradigm, the tools and techniques for SE are changing. CC provides the latest software development environments and the necessary platforms relatively easily and inexpensively. It also allows the provision of software applications equally easily and on a pay-as-you-go basis. Business requirements for the use of software are also changing and there is a need for applications in big data analytics, parallel computing, AI, natural language processing, and biometrics, etc. These require huge amounts of computing power and sophisticated data management mechanisms, as well as device connectivity for Internet of Things (IoT) environments. In terms of hardware, software, communication, and storage, CC is highly attractive for developing complex software that is rapidly becoming essential for all sectors of life, including commerce, health, education, and transportation. The book fills a gap in the SE literature by providing scientific contributions from researchers and practitioners, focusing on frameworks, methodologies, applications, benefits and inherent challenges/barriers to engineering software using the CC paradigm.

Cloud Computing and Software Services IGI Global

This book is intended to introduce the principles of the Event-Driven and Service-Oriented Architecture (SOA 2.0) and its role in the new interconnected world based on the cloud computing architecture paradigm. In this new context, the concept of "service" is widely applied to the hardware and software resources available in the new generation of the Internet. The authors focus on how current and future SOA technologies provide the basis for the smart management of the service model provided by the Platform as a Service (PaaS) layer.

Cloud Computing Packt Publishing Ltd

Heterogeneous Computing Architectures: Challenges and Vision provides an updated vision of the state-of-the-art of heterogeneous computing systems, covering all the aspects related to their design: from the architecture and programming models to hardware/software integration and orchestration to real-time and security requirements. The transitions from multicore processors, GPU computing, and Cloud computing are not separate trends, but aspects of a single trend-mainstream; computers from desktop to smartphones are being permanently transformed into heterogeneous supercomputer clusters. The reader will get an organic perspective of modern heterogeneous systems and their future evolution.

Integration of Cloud Computing and IoT CRC Press

Whether you're already in the cloud, or determining whether or not it makes sense for your organization, *Cloud Computing and Software Services: Theory and Techniques* provides the technical understanding needed to develop and maintain state-of-the-art cloud computing and software services. From basic concepts and recent research findings to future directions, it gathers the insight of 50 experts from around to present a global perspective on the range of technical topics related to cloud computing and Software as a Service (SaaS). The book also: Reviews real cases and applications of cloud computing Discusses the infrastructure cloud and Infrastructure as a Service (IaaS) Considers data- and compute-intensive environments Examines security and reliability in the cloud Witten in a manner that makes this complex subject easy to understand, this is an ideal one-stop reference for anyone interested in cloud computing. The accessible language and wealth of illustrations also make it suitable for academic and research-oriented settings. The comprehensive coverage supplies you with the understanding of cloud computing technologies and trends in parallel computing needed to establish and maintain effective and efficient computing and software services.

Software Project Management for Distributed Computing "O'Reilly Media, Inc."

This unique volume explores cutting-edge management approaches to developing complex software that is efficient, scalable, sustainable, and suitable for distributed environments. Practical insights are offered by an international selection of pre-eminent authorities, including case studies, best practices, and balanced corporate analyses. Emphasis is placed on the use of the latest software technologies and frameworks for life-cycle methods, including the design, implementation and testing stages of software development. Topics and features: · Reviews approaches for reusability, cost and time estimation, and for functional size measurement of distributed software applications · Discusses the core characteristics of a large-scale defense system, and the design of software project management (SPM) as a service · Introduces the 3PR framework, research on crowdsourcing software development, and an innovative approach to modeling large-scale multi-agent software systems · Examines a system architecture for ambient assisted living, and an approach to cloud migration and management assessment · Describes a software error proneness mechanism, a novel Scrum process for use in the defense domain, and

an ontology annotation for SPM in distributed environments · Investigates the benefits of agile project management for higher education institutions, and SPM that combines software and data engineering This important text/reference is essential reading for project managers and software engineers involved in developing software for distributed computing environments. Students and researchers interested in SPM technologies and frameworks will also find the work to be an invaluable resource. Prof. Zaigham Mahmood is a Senior Technology Consultant at Debesis Education UK and an Associate Lecturer (Research) at the University of Derby, UK. He also holds positions as Foreign Professor at NUST and IIU in Islamabad, Pakistan, and Professor Extraordinaire at the North West University Potchefstroom, South Africa.

Web Services, Service-Oriented Architectures, and Cloud Computing Springer Nature

If you're involved in planning IT infrastructure as a network or system architect, system administrator, or developer, this book will help you adapt your skills to work with these highly scalable, highly redundant infrastructure services. While analysts hotly debate the advantages and risks of cloud computing, IT staff and programmers are left to determine whether and how to put their applications into these virtualized services. Cloud Application Architectures provides answers -- and critical guidance -- on issues of cost, availability, performance, scaling, privacy, and security. With Cloud Application Architectures, you will: Understand the differences between traditional deployment and cloud computing Determine whether moving existing applications to the cloud makes technical and business sense Analyze and compare the long-term costs of cloud services, traditional hosting, and owning dedicated servers Learn how to build a transactional web application for the cloud or migrate one to it Understand how the cloud helps you better prepare for disaster recovery Change your perspective on application scaling To provide realistic examples of the book's principles in action, the author delves into some of the choices and operations available on Amazon Web Services, and includes high-level summaries of several of the other services available on the market today. Cloud Application Architectures provides best practices that apply to every available cloud service. Learn how to make the transition to the cloud and prepare your web applications to succeed.

Ernst Denert Award for Software Engineering 2020 Springer Science & Business Media

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.