

Computer systems an integrated approach to architecture and operating systems (2023)

Kernel Architecture and Operating Systems Relationship The Architecture of Computer Hardware, Systems Software, and Networking Protected Mode Software Architecture The Interaction of Architecture and Operating System Design Software Systems Architecture Architectural and Operating System Support for Virtual Memory Computer Systems Systemic Architecture Computer Systems Architectural Support for Single Address Space Operating Systems Essentials of Computer Architecture, Second Edition Computer Architecture Computer Organization and Architecture Store Architecture in a Persistent Operating System Introduction to Operating Systems Designing Security Architecture Solutions The Apollo Guidance Computer System Architecture An Operating System Architecture for Networked Server Infrastructure An architecture for the cooperation of heterogeneous operating systems Systemic Architecture Plug and Play System Architecture Applied Operating System Concepts Designing Embedded Hardware Alpha Architecture Reference Manual IBM Microcomputer Architecture and Assembly Language Enterprise Systems Architecture Design Studio Vol. 4: Working at the Intersection Requirements and Overview of the Lincs Distributed Operating System Architecture The Professional Practice of Architectural Working Drawings Scientific Programming and Computer Architecture Implementing a File Architecture for a Database Operating System Agency Performing Architectures The LOCUS Distributed System Architecture UNIX System Architecture Cloud Native Architectures An Operating System Architecture and Hybrid Scheduling Methodology for Real-time Systems with Uncertainty Thirteenth International Conference on Architectural Support for Programming Languages and Operating Systems Operating System Architecture for Embedded Systems

Kernel Architecture and Operating Systems Relationship 2020-03-04

research paper undergraduate from the year 2019 in the subject computer science theory course advance os language english abstract in this paper a comparison is done on the architecture of the kernel the core part of the operating system different kernels are studied with specific example of operating systems each kernel is explained with detail and examples of operating system implementing the kernel are shown in table along with features after completing the kernel architecture then genetic inheritance and relationship among the different operating systems are shown this relationship shows different categories of the operating system along with the birth date and death date and current state

The Architecture of Computer Hardware, Systems Software, and Networking 2021-04-06

the architecture of computer hardware systems software and networking is designed help students majoring in information technology it and information systems is understand the structure and operation of computers and computer systems an integrated approach to architecture and operating systems

2019-02-26 1/19

based devices requiring only basic computer skills this accessible textbook introduces the basic principles of system architecture and explores current technological practices and trends using clear easy to understand language throughout the text numerous relatable examples subject specific illustrations and in depth case studies reinforce key learning points and show students how important concepts are applied in the real world this fully updated sixth edition features a wealth of new and revised content that reflects today s technological landscape organized into five parts the book first explains the role of the computer in information systems and provides an overview of its components subsequent sections discuss the representation of data in the computer hardware architecture and operational concepts the basics of computer networking system software and operating systems and various interconnected systems and components students are introduced to the material using ideas already familiar to them allowing them to gradually build upon what they have learned without being overwhelmed and develop a deeper knowledge of computer architecture

Protected Mode Software Architecture 1996

anyone writing real time operating systems multi task operating systems or device drivers for these systems needs to be able to do assembly language protected mode programming protected mode software architecture helps readers understand the problems that single task and multitasking operating systems must deal with and then examines each component of both the real and protected mode software architectures of the post 286 intel processors

The Interaction of Architecture and Operating System Design 1990

in addition we identify areas in which architectures could better and cost effectively accommodate operating system needs and areas in which operating system design could accommodate certain necessary characteristics of cost effective high performance microprocessors

Software Systems Architecture 2012

this guide for software architects builds upon legacies of best practice explaining key areas and how to make architectural designs successful

Architectural and Operating System Support for Virtual Memory 2017-09-29

this book provides computer engineers academic researchers new graduate students and seasoned practitioners an end to end overview of virtual memory we begin with a recap of foundational concepts and discuss not only state of the art virtual memory hardware and software support available today but also emerging research trends in this space the span of topics covers processor microarchitecture memory systems operating system design and memory allocation we show how efficient virtual memory implementations hinge on careful hardware and software cooperation and we discuss new research directions aimed at addressing emerging problems in this space virtual memory is a classic computer science

abstraction and one of the pillars of the computing revolution it has long enabled hardware flexibility software portability and overall better security to name just a few of its powerful benefits nearly all user level programs today take for granted that they will have been freed from the burden of physical memory management by the hardware the operating system device drivers and system libraries however despite its ubiquity in systems ranging from warehouse scale datacenters to embedded internet of things iot devices the overheads of virtual memory are becoming a critical performance bottleneck today virtual memory architectures designed for individual cpus or even individual cores are in many cases struggling to scale up and scale out to today s systems which now increasingly include exotic hardware accelerators such as gpus fpgas or dsps and emerging memory technologies such as non volatile memory and which run increasingly intensive workloads such as virtualized and or big data applications as such many of the fundamental abstractions and implementation approaches for virtual memory are being augmented extended or entirely rebuilt in order to ensure that virtual memory remains viable and performant in the years to come

Computer Systems 2011

in the early days of computing hardware and software systems were designed separately today as multicore systems predominate this separation is becoming impractical computer systems examines the key elements of all computer systems using an integrated approach that treats hardware and software as part of the same larger system students gain important insights into the interplay between hardware and software and leave the course with a better understanding of a modern computer system

Systemic Architecture 2013-05-07

this is a manual investigating the subject of urban ecology and systemic development from the perspective of architectural design it sets out to explore two main goals to discuss the contemporary relevance of a systemic practice to architectural design and to share a toolbox of informational design protocols developed to describe the city as a territory of self organization collecting together nearly a decade of design experiments by the authors and their practice ecologicstudio the book discusses key disciplinary definitions such as ecologic urbanism algorithmic architecture bottom up or tactical design behavioural space and the boundary of the natural and the artificial realms within the city and architecture a new kind of real time world city is illustrated in the form of an operational design manual for the assemblage of proto architectures the incubation of proto gardens and the coding of proto interfaces these prototypes of machinic architecture materialize as synthetic hybrids embedded with biological life proto gardens computational power behavioural responsiveness cyber gardens spatial articulation comachines and fibrous structures remote sensing funclouds and communication capabilities ecological footprint grotto supporting the authors own essays and projects are contributions from key innovators in contemporary architecture and urban design michael batty andrew hudson smith michael weinstock and patrik schumacher

Computer Systems 2011

in the early days of computing hardware and software systems were designed separately today as multicore systems predominate this separation is becoming impractical computer systems examines the key elements of all computer systems using an integrated approach that treats hardware and software as part of the same larger system students gain important insights into the interplay between hardware and software and leave the course with a better understanding of a modern computer system

Architectural Support for Single Address Space Operating Systems 1992

abstract recent microprocessor announcements show a trend toward wide address computers architectures that support 64 bits of virtual address space such architectures facilitate fundamentally new operating system organizations that promote efficient data sharing and cooperation both between complex applications and between parts of the operating system itself one such organization is the single address space operating system in which all the processes run within a single global virtual address space protection is provided not through conventional address space boundaries but through protection domains that dictate which pages of the global address space a process can reference this paper focuses on the architectural implications of single address space operating systems specifically the interaction between the memory system architecture and the operating system s use of addressing and protection our purpose is to explore certain architectural opportunities created by single address space systems by evaluating two protection models that support them the first provides protection on a per page per domain basis we define the protection lookaside buffer a hardware structure that implements this model the second provides protection on a page group basis this model is implemented in the hewlett packard pa risc architecture

Essentials of Computer Architecture, Second Edition 2017-01-06

this easy to read textbook provides an introduction to computer architecture while focusing on the essential aspects of hardware that programmers need to know the topics are explained from a programmer s point of view and the text emphasizes consequences for programmers divided in five parts the book covers the basics of digital logic gates and data paths as well as the three primary aspects of architecture processors memories and i o systems the book also covers advanced topics of parallelism pipelining power and energy and performance a hands on lab is also included the second edition contains three new chapters as well as changes and updates throughout

Computer Architecture 2012-02-15

this book constitutes the thoroughly refereed post conference proceedings of the workshops held at the 37th international symposium on computer architecture isca 2010 in saint malo france in june 2010 the 28 revised full papers presented were carefully reviewed and selected from the lectures given at 5 of these workshops the papers address topics ranging from novel memory architectures to emerging application design and performance analysis and
2019-02-26 4/19 computer systems an integrated approach to architecture and operating systems

encompassed the following workshops a4mmc applications for multi and many cores amas bt 3rd workshop on architectural and micro architectural support for binary translation eama the 3rd workshop for emerging applications and many core architectures weed 2nd workshop on energy efficient design as well as wiosca the annual workshop on the interaction between operating systems and computer architecture

Computer Organization and Architecture 2000

for junior senior graduate level courses in computer organization and architecture in the computer science and engineering departments this text provides a clear comprehensive presentation of the organization and architecture of modern day computers emphasizing both fundamental principles and the critical role of performance in driving computer design the text conveys concepts through a wealth of concrete examples highlighting modern cisc and risc systems

Store Architecture in a Persistent Operating System 1998

anyone who uses a computer is using an operating system although very few people appreciate what an operating system is or what it does the most visible part of an operating system is the graphical user interface gui and yet most of what an operating system does is completely invisible introduction to operating systems behind the desktop takes a unique approach to the teaching of operating systems starting with what you will already know the gui desktop before taking you behind below and beyond the scenes to explore those invisible aspects of the subject no prerequisite knowledge is assumed other than a general knowledge of programming introduction to operating systems behind the desktop features an in depth coverage of the core features of modern operating systems with a wealth of examples drawn from real systems such as windows and linux a concise and non mathematical approach that allows you to get quickly to the heart of the subject a treatment that assumes no knowledge of computer architecture brief questions and more in depth exercises integrated throughout each chapter to promote active involvement practical in depth projects and end of chapter additional resources and references to encourage further exploration mini glossaries at the end of each chapter to ensure understanding of key terms plus a unified glossary at the end of the book for quick and easy reference a companion website includes comprehensive teaching resources for lecturers

Introduction to Operating Systems 2017-09-16

the first guide to tackle security architecture at the softwareengineering level computer security has become a critical business concern and assuch the responsibility of all it professionals in thisgroundbreaking book a security expert with at t business srenowned network services organization explores system securityarchitecture from a software engineering perspective he explainswhy strong security must be a guiding principle of the developmentprocess and identifies a common set of features found in mostsecurity products explaining how they can and should impact thedevelopment cycle the book also offers in depth discussions ofsecurity technologies cryptography database security applicationand operating system security and more

Designing Security Architecture Solutions 2002-10-01

the technological marvel that facilitated the apollo missions to the moon was the on board computer in the 1960s most computers filled an entire room but the spacecraft s computer was required to be compact and low power although people today find it difficult to accept that it was possible to control a spacecraft using such a primitive computer it nevertheless had capabilities that are advanced even by today s standards this is the first book to fully describe the apollo guidance computer s architecture instruction format and programs used by the astronauts as a comprehensive account it will span the disciplines of computer science electrical and aerospace engineering however it will also be accessible to the space enthusiast in short the intention is for this to be the definitive account of the apollo guidance computer frank o brien s interest in the apollo program began as a serious amateur historian about 12 years ago he began performing research and writing essays for the apollo lunar surface journal and the apollo flight journal much of this work centered on his primary interests the apollo guidance computer agc and the lunar module these journals are generally considered the canonical online reference on the flights to the moon he was then asked to assist the curatorial staff in the creation of the cradle of aviation museum on long island new york where he helped prepare the lunar module simulator a lm procedure trainer and an apollo space suit for display he regularly lectures on the apollo computer and related topics to diverse groups from nasa s computer engineering conferences the ieee acm computer festivals and university student groups

The Apollo Guidance Computer 2010-06-25

the pillars of the bridge on the cover of this book date from the roman empire and they are in daily use today an example of conventional engineering at its best modern commodity operating systems are examples of current system programming at its best with bugs discovered and fixed on a weekly or monthly basis this book addresses the question of whether it is possible to construct computer systems that are as stable as roman designs the authors successively introduce and explain specifications constructions and correctness proofs of a simple mips processor a simple compiler for a c dialect an extension of the compiler handling c with inline assembly interrupts and devices and the virtualization layer of a small operating system kernel a theme of the book is presenting system architecture design as a formal discipline and in keeping with this the authors rely on mathematics for conciseness and precision of arguments to an extent common in other engineering fields this textbook is based on the authors teaching and practical experience and it is appropriate for undergraduate students of electronics engineering and computer science all chapters are supported with exercises and examples

System Architecture 2016-10-04

collections of hardware components are the foundation of computation and consist of interconnections of different types of the same core elements processors disks memory cards i o devices and network links designing a system for managing collections of hardware is challenging because modern infrastructures i distribute resource control across multiple autonomous sites ii operate diverse sets of hardware and iii support a variety of programming models for

developing and executing software services an operating system is a software layer that manages hardware by coordinating its interaction with software this thesis defines and evaluates an architecture for a networked operating system that manages collections of hardware in infrastructures spread across networks such as the internet the foundation of a networked operating system determines how software services share a common hardware platform a fundamental property common to all forms of resource sharing is that software services by definition share hardware components and do not use them forever a lease is a natural construct for restricting the use of a shared resource to a well defined length of time our architecture employs a general neutrality principle which states that a networked operating system should be policy neutral since only users and site administrators and not operating system developers know how to manage their software and hardware experience building deploying and using a prototype has led us to view neutrality as a guiding design principle our hypothesis is that an operating system architecture for infrastructure resource management that focuses narrowly on leasing control of hardware provides a foundation for multi lateral resource negotiation arbitration and fault tolerance in evaluating our hypothesis we make the following contributions introduce a set of design principles for networked operating systems the principles adapt and extend principles from node

An Operating System Architecture for Networked Server Infrastructure 2007

the book investigates the subject of urban ecology from the perspective of architectural design engaging its definition at multiple levels the biological the informational and the social the book has two main goals to discuss the contemporary relevance of a systemic practice to architectural design and to share a toolbox of informational design protocols developed to describe the city as a territory of self organization a new kind of emergent real time world city structured in the form of a manual the authors draw on nearly a decade of design experiments from their ecologicstudio practice

An architecture for the cooperation of heterogeneous operating systems 1987

learn microsoft s major new pc hardware standard

Systemic Architecture 2012

new edition of the bestseller provides readers with a clear description of the concepts that underlie operating systems uses java to illustrate many ideas and includes numerous examples that pertain specifically to popular operating systems such as unix solaris 2 windows nt and xp mach the apple macintosh os ibm s os 2 and linux style is even more hands on than the previous edition with extensive programming examples written in java and c new coverage includes recent advances in windows 2000 xp linux solaris 9 and mac os x detailed case studies of windows xp and linux give readers full coverage of two very popular operating systems also available from the same authors the highly successful operating system concepts sixth edition 0 471 25060 0

Plug and Play System Architecture 1995

intelligent readers who want to build their own embedded computer systems installed in everything from cell phones to cars to handheld organizers to refrigerators will find this book to be the most in depth practical and up to date guide on the market designing embedded hardware carefully steers between the practical and philosophical aspects so developers can both create their own devices and gadgets and customize and extend off the shelf systems there are hundreds of books to choose from if you need to learn programming but only a few are available if you want to learn to create hardware designing embedded hardware provides software and hardware engineers with no prior experience in embedded systems with the necessary conceptual and design building blocks to understand the architectures of embedded systems written to provide the depth of coverage and real world examples developers need designing embedded hardware also provides a road map to the pitfalls and traps to avoid in designing embedded systems designing embedded hardware covers such essential topics as the principles of developing computer hardware core hardware designs assembly language concepts parallel i o analog digital conversion timers internal and external uart serial peripheral interface inter integrated circuit bus controller area network can data converter interface dci low power operation this invaluable and eminently useful book gives you the practical tools and skills to develop build and program your own application specific computers

Applied Operating System Concepts 2003

alpha architecture reference manual third edition is the authoritative reference on the definition of alpha architecture revised by the alpha architecture committee this book contains a complete description of the common architecture required of all implementations and describes the interfaces to support the windows nt digital unix and openvms operating systems the third edition reflects the latest implementations of the architecture including the 21164a 21164pc and 21264 some of the extensions to the architecture and the enhancement to the technical content include new byte and word load store and sign extend operations new multimedia instructions new population enumeration and floating point square root instructions new instructions to improve data cache efficiency and updated windows nt section the alpha chip is the fastest chip on the marketplace today it runs windows nt unix and openvms operating systems new base level server configurations provide four times the memory of current systems contains updated windows nt section to reflect current technical port to alpha includes new insights into the software aspects of the implementation covers new multimedia instructions for increased performance with high end graphics applications

Designing Embedded Hardware 2002

presents assembly language as a vehicle for a practical introduction to computer architecture and operating systems for readers with a basic knowledge of pascal or c the guide explores iapx assembly language machine level aspects of procedures in high level languages and more

Alpha Architecture Reference Manual 1998-04

enhance your technical and business skills to better manage your organization s technology ecosystem this book aims to explain how to align the technology landscape to service your company s business operating model the book begins by exploring different architectural approaches before taking a deep dive into multiple layers of the architectural stack and the methodology of each component you ll also learn about the many products delivered by enterprise architecture to complete the book author daljit banger delves into the various roles and responsibilities of an enterprise architect after completing enterprise systems architecture you will understand how to develop an ict information communication technology strategy to meet the needs of your organization what will you learn gain a complete understanding of enterprise architecture conceptualize the enterprise ecosystem using the esa canvas master the products and services of an enterprise architecture function who this book is for architects enterprise solution or technical ctos business analysts or any stakeholder in delivering technology services to their organization

IBM Microcomputer Architecture and Assembly Language 1992

without environmental justice there can be no social justice this volume sets the table for inclusive architectural engagement during a time circumscribed by pandemic climate change and inequality an esteemed group of international voices amplify interactions involving sexism racism classism homophobia transphobia and environmental catastrophe exploring how they inextricably linked without acknowledging the interconnectedness of these injustices we will not find effective ways to halt the deepening crisis features marcos cruz casper laing ebbensgaard antón garcía abril alexandra daisy ginsburg ariane lourie harrison kerry holden walter hood joyce hwang kabage karanja v mitch mcewen débora mesa timothy morton stella mutegi brenda parker carolyn steel mckenzie wark kathryn yusoff and joanna zylinska

Enterprise Systems Architecture 2022-10-01

the detailed highly illustrated comprehensive guide to architectural working drawings the professional practice of architectural working drawings is a complete guide to the skills you need to create a set of drawings that clearly and effectively communicate your design covering everything from site floor framing and foundation plans to building sections and elevations this book presents crucial concepts and real world techniques architects rely on every day you ll learn the standards customs regulations and symbols alongside computer generated drawings 3d modeling building information modeling and other architectural technology this new fifth edition includes updated information on sustainability concepts layering systems in line with aia standards deeper explorations of dimensioning more sample ada drawings and a new selection of case studies that offer a real world glimpse into how these topics relate to the architect s everyday work hundreds of drawings demonstrate important skills and concepts and online ancillary materials offer a robust set of resources to students and instructors architectural drawings must be precise accurate and complete they must follow certain standards that make them universally understood in the proper context this book teaches you how to produce professional level drawings that leave no room for questions or confusion create architectural drawings that effectively communicate your design learn techniques used in both residential and light

commercial projects investigate bim 3d modeling and other architectural technologies understand dimensioning sustainability ada standards and more architects use drawings as a second language to effectively communicate ideas to clients contractors builders and other design professionals throughout all stages of the project the professional practice of architectural working drawings teaches you how to become fluent in the visual language of architecture to communicate more effectively with all project stakeholders

Design Studio Vol. 4: Working at the Intersection 2022-07-01

what makes computer programs fast or slow to answer this question we have to get behind the abstractions of programming languages and look at how a computer really works this book examines and explains a variety of scientific programming models programming models relevant to scientists with an emphasis on how programming constructs map to different parts of the computer s architecture two themes emerge program speed and program modularity throughout this book the premise is to get under the hood and the discussion is tied to specific programs the book digs into linkers compilers operating systems and computer architecture to understand how the different parts of the computer interact with programs it begins with a review of c c and explanations of how libraries linkers and makefiles work programming models covered include pthreads openmp mpi tcp ip and cuda the emphasis on how computers work leads the reader into computer architecture and occasionally into the operating system kernel the operating system studied is linux the preferred platform for scientific computing linux is also open source which allows users to peer into its inner workings a brief appendix provides a useful table of machines used to time programs provided by publisher

Requirements and Overview of the Lincs Distributed Operating System Architecture 1984

widely used operating systems such as linux are becoming outdated because they were optimized for the limited processing power of several decades ago scalability is a growing concern given the powerful computing environments available now instead of adding onto the current operating system design to address these problems our team proposed a design for a system we call the database operating system dbos that uses database tables to represent the state and queries to represent operations to the state in this study i show that the performance of this new os design is competitive with current operating systems in order to obtain performance metrics the following few key components are in focus the file system scheduler and ipc handler this study focuses on the file system implementation the file system is a simple file architecture using voltdb as our in memory database with tables representing files and stored procedures representing io tasks such as read and write dbos uses main memory as the primary storage and mechanisms were implemented to spill data to disk when necessary benchmark tests were conducted against dbos and other existing operating systems which prove that dbos is not just competitive with but can outperform existing operating systems

The Professional Practice of Architectural Working Drawings 2017-09-25

while the potential of agency is most frequently taken to be the power and freedom to act for oneself for the architectural community this also involves the power and responsibility to act as intermediaries on behalf of others presenting current thinking from practitioners and scholars from around the world this book asks for a more active relationship between the humanities the architectural profession and society considering issues of architectural research as an agency of transformation this book explores how humanities research can better contribute towards understanding current architectural needs

Scientific Programming and Computer Architecture 2017

performing architectures offers a coherent introduction to the fields of performance and contemporary architecture exploring the significance of architecture for performance theory and theatre and performance practice it maps the diverse relations that exist between these disciplines and demonstrates how their aims concerns and practices overlap through shared interests in space action and event through a wide range of international examples and contributions from scholars and practitioners it offers readers an analytical survey of current practices and equips them with the tools for analyzing site specific and immersive theatre and performance the essays in this volume contributed by leading theorists and practitioners from both disciplines focus on three key sites of encounter projects examines recent trends in architecture for performance practices looks at cross currents in artistic practice including spatial dramaturgies performance architectonics and performative architectures and pedagogies considers the uses of performance in architectural education and architecture in teaching performance the volume provides an essential introduction to the ways in which performance and architecture as socio spatial processes and as things made or constructed operate as generating shaping and steering forces in understanding and performing the other

Implementing a File Architecture for a Database Operating System 2021

locus a distributed version of the popular operating system unix provides an excellent solution it makes a collection of computers whether they are workstations or mainframes as easy to use as a single computer by providing a set of supports for the underlying network that is virtually invisible to users and applications programs computer systems consisting of many machines will be the norm within a few years however making a collection of machines appear as a single coherent system in which the location of files servers programs or users is invisible to users who do not wish to know is a very difficult problem locus a distributed version of the popular operating system unix provides an excellent solution it makes a collection of computers whether they are workstations or mainframes as easy to use as a single computer by providing a set of supports for the underlying network that is virtually invisible to users and applications programs this network transparency dramatically reduces the cost of developing and maintaining software and considerably improves the user model of the system it also permits a variety of system configurations including diskless workstations full duplex i o to large mainframes transparently shared peripherals and incremental growth from one workstation to a large network including mainframes with no effect on applications software required to take

advantage of the altered configurations in addition to transparent distributed operation locus features also include high performance and reliability full unix compatibility support for heterogeneous machines and systems automatic management of replicated file storage and architectural extensions to support extensive interprocess communication and internetworking contents the locus architecture distributed operation and transparency the locus distributed filesystem remote tasking filesystem recovery dynamic reconfiguration of locus heterogeneity system management appendixes locus version vector mechanism locus internal network messages the locus distributed system architecture is included in the computer systems series edited by herb schwetman

Agency 2009-12-04

andleigh describes the internal algorithms and the design of the unix operating system with a simplified approach sure to appeal to both new and experienced unix users fully illustrated to help users visualize concepts

Performing Architectures 2018-05-03

learn and understand the need to architect cloud applications and migrate your business to cloud efficiently key features understand the core design elements required to build scalable systems plan resources and technology stacks effectively for high security and fault tolerance explore core architectural principles using real world examples book description cloud computing has proven to be the most revolutionary it development since virtualization cloud native architectures give you the benefit of more flexibility over legacy systems to harness this businesses need to refresh their development models and architectures when they find they don t port to the cloud cloud native architectures demonstrates three essential components of deploying modern cloud native architectures organizational transformation deployment modernization and cloud native architecture patterns this book starts with a quick introduction to cloud native architectures that are used as a base to define and explain what cloud native architecture is and is not you will learn what a cloud adoption framework looks like and develop cloud native architectures using microservices and serverless computing as design principles you ll then explore the major pillars of cloud native design including scalability cost optimization security and ways to achieve operational excellence in the concluding chapters you will also learn about various public cloud architectures ranging from aws and azure to the google cloud platform by the end of this book you will have learned the techniques to adopt cloud native architectures that meet your business requirements you will also understand the future trends and expectations of cloud providers what you will learn learn the difference between cloud native and traditional architecture explore the aspects of migration when and why to use it identify the elements to consider when selecting a technology for your architecture automate security controls and configuration management use infrastructure as code and cicd pipelines to run environments in a sustainable manner understand the management and monitoring capabilities for aws cloud native application architectures who this book is for cloud native architectures is for software architects who are keen on designing resilient scalable and highly available applications that are native to the cloud

The LOCUS Distributed System Architecture 2003-01-01

personal computer desktops and other standardized computer architectures are optimized to provide the best performance for frequently occurring conditions real time systems designed using worst case analysis for such architectures under utilize the hardware this shortcoming provides the motivation for scheduling algorithms that can improve overall utilization by accounting for inherent uncertainty in task execution duration a real time task dispatcher must perform its function with constant scheduling overhead given the non hard nature of the problem of scheduling non preemptible tasks dispatch decisions for such systems cannot be made in real time this argues for a hybrid architecture that includes an offline policy generator and an online dispatcher this dissertation proposes and demonstrates a hybrid operating system architecture that enables cost optimal task dispatch on commercial off the shelf cots systems this is achieved by explicitly accounting for the stochastic nature of each task s execution time and dynamically learning the system behavior decision theoretic scheduling dts provides the framework for scheduling under uncertainty the real time scheduling problem is cast as a markov decision process mdp an offline policy generator discovers an epsilon optimal policy using value iteration with model learning for the selected representation of state action model and rewards the policy discovered using value iteration is proved to have a probability of failure that is less than any arbitrarily small user specified value the promisqos operating system architecture demonstrates a practical implementation of the proposed approach promisqos is a linux based platform that supports concurrent execution of time based preemptible and non preemptible real time tasks and best effort processes on an interactive workstation several examples demonstrate that model learning and scheduling under uncertainty enables promisqos to achieve better cpu utilization than other scheduling methods real time task sets that solve practical problems such as a laplace solver matrix multiplication and transpose demonstrate the robustness and correctness of promisqos design and implementation this pioneering application demonstrates the feasibility of mdp based scheduling for real time tasks in practical systems it also opens avenues for further research into the use of such dts techniques in real time system design

UNIX System Architecture 1990

Cloud Native Architectures 2018-08-31

An Operating System Architecture and Hybrid Scheduling Methodology for Real-time Systems with Uncertainty 2004

Thirteenth International Conference on Architectural Support for Programming Languages and Operating Systems 2008

Operating System Architecture for Embedded Systems 1998

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