

Linux Kernel Networking Implementation And Theory Experts Voice In Open Source

Linux System ProgrammingLinux RoutersUnderstanding the Linux
KernelMultimedia and Network Information SystemsBPF Performance
ToolsMastering Linux Kernel DevelopmentDomain-driven DesignThe Linux
Networking ArchitectureHow Linux Works, 2nd EditionLinux TCP/IP Networking for
Embedded SystemsRed Hat Linux Networking and System AdministrationLinux
Device Drivers DevelopmentTCP/IP Architecture, Design, and Implementation in
LinuxZero Configuration NetworkingLinux Networking CookbookLinux Kernel
DevelopmentUNIX FilesystemsLinux Network Administrator's GuideUnderstanding
Linux Network InternalsLinux Networking Clearly ExplainedMastering Linux Kernel
DevelopmentLinux Kernel InternalsThe Linux Programming InterfaceLearning
Computer Architecture with Raspberry PiTCP/IP Illustrated, Volume 1Linux Device
DriversLinux Network Administrator's GuideProfessional Linux Kernel
ArchitectureLinux Kernel NetworkingIA-64 Linux KernelSystems
PerformanceNetworking Systems Design and DevelopmentCloud Native Data
Center NetworkingLinux BibleLinux Kernel in a NutshellThe Definitive Guide to
Linux Network ProgrammingIntroduction to Linux (Second Edition)Linux Network
Administrator's GuideLinux Device DriversEssential Linux Device Drivers

Linux System Programming

Linux Routers

Recent years have seen remarkable progress on both advanced multimedia data processing and intelligent network information systems. The objective of this book is to contribute to the development of multimedia processing and the intelligent information systems and to provide the researches with the essentials of current knowledge, experience and know-how. Although many aspects of such systems have already been under investigation, but there are many new that wait to be discovered and defined. The book contains a selection of 36 papers based on original research presented during the 10th International Conference on Multimedia & Network Information Systems (MISSI 2016) held on 14-16 September 2016 in Wrocław, Poland. The papers provide an overview the achievements of researches from several countries in three continents. The volume is divided into five parts: (a) Images and Videos - Virtual and Augmented Reality, (b) Voice Interactions in Multimedia Systems, (c) Tools and Applications, (d) Natural Language in Information Systems, and (e) Internet and Network Technologies. The book is an excellent resource for researchers, those working in multimedia, Internet, and Natural Language technologies, as well as for students interested in

computer science and other related fields.

Understanding the Linux Kernel

Unlike some operating systems, Linux doesn't try to hide the important bits from you—it gives you full control of your computer. But to truly master Linux, you need to understand its internals, like how the system boots, how networking works, and what the kernel actually does. In this completely revised second edition of the perennial best seller *How Linux Works*, author Brian Ward makes the concepts behind Linux internals accessible to anyone curious about the inner workings of the operating system. Inside, you'll find the kind of knowledge that normally comes from years of experience doing things the hard way. You'll learn: –How Linux boots, from boot loaders to init implementations (systemd, Upstart, and System V) –How the kernel manages devices, device drivers, and processes –How networking, interfaces, firewalls, and servers work –How development tools work and relate to shared libraries –How to write effective shell scripts You'll also explore the kernel and examine key system tasks inside user space, including system calls, input and output, and filesystems. With its combination of background, theory, real-world examples, and patient explanations, *How Linux Works* will teach you what you need to know to solve pesky problems and take control of your operating system.

Multimedia and Network Information Systems

Presents an overview of kernel configuration and building for version 2.6 of the Linux kernel.

BPF Performance Tools

“For an engineer determined to refine and secure Internet operation or to explore alternative solutions to persistent problems, the insights provided by this book will be invaluable.” —Vint Cerf, Internet pioneer TCP/IP Illustrated, Volume 1, Second Edition, is a detailed and visual guide to today’s TCP/IP protocol suite. Fully updated for the newest innovations, it demonstrates each protocol in action through realistic examples from modern Linux, Windows, and Mac OS environments. There’s no better way to discover why TCP/IP works as it does, how it reacts to common conditions, and how to apply it in your own applications and networks. Building on the late W. Richard Stevens’ classic first edition, author Kevin R. Fall adds his cutting-edge experience as a leader in TCP/IP protocol research, updating the book to fully reflect the latest protocols and best practices. He first introduces TCP/IP’s core goals and architectural concepts, showing how they can robustly connect diverse networks and support multiple services running concurrently. Next, he carefully explains Internet addressing in both IPv4 and IPv6

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networks. Then, he walks through TCP/IP's structure and function from the bottom up: from link layer protocols—such as Ethernet and Wi-Fi—through network, transport, and application layers. Fall thoroughly introduces ARP, DHCP, NAT, firewalls, ICMPv4/ICMPv6, broadcasting, multicasting, UDP, DNS, and much more. He offers extensive coverage of reliable transport and TCP, including connection management, timeout, retransmission, interactive data flow, and congestion control. Finally, he introduces the basics of security and cryptography, and illuminates the crucial modern protocols for protecting security and privacy, including EAP, IPsec, TLS, DNSSEC, and DKIM. Whatever your TCP/IP experience, this book will help you gain a deeper, more intuitive understanding of the entire protocol suite so you can build better applications and run more reliable, efficient networks.

Mastering Linux Kernel Development

Find an introduction to the architecture, concepts and algorithms of the Linux kernel in Professional Linux Kernel Architecture, a guide to the kernel sources and large number of connections among subsystems. Find an introduction to the relevant structures and functions exported by the kernel to userland, understand the theoretical and conceptual aspects of the Linux kernel and Unix derivatives, and gain a deeper understanding of the kernel. Learn how to reduce the vast amount of information contained in the kernel sources and obtain the skills

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necessary to understand the kernel sources.

Domain-driven Design

This introduction to networking on Linux now covers firewalls, including the use of ipchains and Netfilter, masquerading, and accounting. Other new topics in this second edition include Novell (NCP/IPX) support and INN (news administration).

The Linux Networking Architecture

Benvenuti describes the relationship between the Internet's TCP/IP implementation and the Linux Kernel so that programmers and advanced administrators can modify and fine-tune their network environment.

How Linux Works, 2nd Edition

Passionately democratic in its advocacy of networking for the masses, this is the first book on Linux networking written especially for the novice user. Because the free, open-source Linux operating system is winning so many converts today, the number of Linux-based networks will grow exponentially over the next few years. Taking up where Linux Clearly Explained left off, Linux Networking Clearly

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Explained walks the reader through the creation of a TCP/IP-based, Linux-driven local area network, beginning with a "sandbox" installation involving just two or three computers. Readers master the fundamentals of system and network administration-including handling user accounts and setting up security-in this less complex environment. The author then helps them along to the more sophisticated techniques associated with connecting this network to the Internet. * Focuses on the 20% of Linux networking knowledge that satisfies 80% of network needs-including the needs of small businesses, workgroups within enterprises and high-tech homes. * Teaches novices to implement DNS servers, network information services (NIS), network file systems (NFS), and all of the most important TCP/IP services, including email, Web and newsgroup access. * Explains how to set up AppleTalk and Windows NT domain servers for networks that include Macintosh or Windows systems. * Comes with a CD containing the latest version of Red Hat Linux, as well as additional freeware/shareware Linux tools and network management applications.

Linux TCP/IP Networking for Embedded Systems

Whether you're just starting out with Linux or looking to hone your existing skills, this book will provide you with the knowledge you need.

Red Hat Linux Networking and System Administration

If you want to study, build, or simply validate your thinking about modern cloud native data center networks, this is your book. Whether you're pursuing a multitenant private cloud, a network for running machine learning, or an enterprise data center, author Dinesh Dutt takes you through the steps necessary to design a data center that's affordable, high capacity, easy to manage, agile, and reliable. Ideal for network architects, data center operators, and network and containerized application developers, this book mixes theory with practice to guide you through the architecture and protocols you need to create and operate a robust, scalable network infrastructure. The book offers a vendor-neutral way to look at network design. For those interested in open networking, this book is chock-full of examples using open source software, from FRR to Ansible. In the context of a cloud native data center, you'll examine: Clos topology Network disaggregation Network operating system choices Routing protocol choices Container networking Network virtualization and EVPN Network automation

Linux Device Drivers Development

Written by experts, this unique Linux networking tutorial/reference provides a practical overview and understanding of the implementation of networking

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protocols in the Linux kernel. The organization of the book follows the TCP/IP layering model, beginning with the kernel's network device drivers, continuing with link-layer protocols such as PPP, and finally giving a description of all core protocols of the TCP/IP protocol family.

TCP/IP Architecture, Design, and Implementation in Linux

Describes ways to incorporate domain modeling into software development.

Zero Configuration Networking

* Clear and abundant examples, using real-world code, written by three experienced developers who write networking code for a living. * Describes how to build clients and servers, explains how TCP, UDP, and IP work, and shows how to debug networking applications via packet sniffing and deconstruction. * Well suited for Windows developer looking to expand to Linux, or for the proficient Linux developer looking to incorporate client-server programming into their application.

Linux Networking Cookbook

Use your Raspberry Pi to get smart about computing fundamentals In the 1980s,

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the tech revolution was kickstarted by a flood of relatively inexpensive, highly programmable computers like the Commodore. Now, a second revolution in computing is beginning with the Raspberry Pi. Learning Computer Architecture with the Raspberry Pi is the premier guide to understanding the components of the most exciting tech product available. Thanks to this book, every Raspberry Pi owner can understand how the computer works and how to access all of its hardware and software capabilities. Now, students, hackers, and casual users alike can discover how computers work with Learning Computer Architecture with the Raspberry Pi. This book explains what each and every hardware component does, how they relate to one another, and how they correspond to the components of other computing systems. You'll also learn how programming works and how the operating system relates to the Raspberry Pi's physical components. Co-authored by Eben Upton, one of the creators of the Raspberry Pi, this is a companion volume to the Raspberry Pi User Guide An affordable solution for learning about computer system design considerations and experimenting with low-level programming Understandable descriptions of the functions of memory storage, Ethernet, cameras, processors, and more Gain knowledge of computer design and operation in general by exploring the basic structure of the Raspberry Pi The Raspberry Pi was created to bring forth a new generation of computer scientists, developers, and architects who understand the inner workings of the computers that have become essential to our daily lives. Learning Computer Architecture with the Raspberry Pi is your gateway to the world of computer system design.

Linux Kernel Development

* Updated to cover Red Hat Linux Enterprise Workstation with the latest on advanced Linux kernel features, the Tux Web server, the latest Apache 2.x Web server, and the expanded suite of custom configuration tools * Starts with network planning and Red Hat installation and configuration, then progresses to optimizing network and Internet services and monitoring and maintaining the network * Examines the basics of Red Hat Linux security and offers trouble-shooting and problem-solving advice * Includes important new chapters that focus on optimizing standard network services, such as file and print services, and Internet-related servers, such as the Apache Web server Copyright © 2004 by Red Hat, Inc. Material from Chapters 4-6, 8-10, 17 and 21 may be distributed only subject to the terms and conditions set forth in the Open Publication License, V1.0 or later (the latest version is presently available at <http://www.opencontent.org/openpub/>).

UNIX Filesystems

UNIX, UNIX LINUX & UNIX TCL/TK. Write software that makes the most effective use of the Linux system, including the kernel and core system libraries. The majority of both Unix and Linux code is still written at the system level, and this book helps you focus on everything above the kernel, where applications such as Apache,

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bash, cp, vim, Emacs, gcc, gdb, glibc, ls, mv, and X exist. Written primarily for engineers looking to program at the low level, this updated edition of Linux System Programming gives you an understanding of core internals that makes for better code, no matter where it appears in the stack. -- Provided by publisher.

Linux Network Administrator's Guide

Linux Kernel Networking takes you on a guided in-depth tour of the current Linux networking implementation and the theory behind it. Linux kernel networking is a complex topic, so the book won't burden you with topics not directly related to networking. This book will also not overload you with cumbersome line-by-line code walkthroughs not directly related to what you're searching for; you'll find just what you need, with in-depth explanations in each chapter and a quick reference at the end of each chapter. Linux Kernel Networking is the only up-to-date reference guide to understanding how networking is implemented, and it will be indispensable in years to come since so many devices now use Linux or operating systems based on Linux, like Android, and since Linux is so prevalent in the data center arena, including Linux-based virtualization technologies like Xen and KVM.

Understanding Linux Network Internals

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Explore Implementation of core kernel subsystems About This Book Master the design, components, and structures of core kernel subsystems Explore kernel programming interfaces and related algorithms under the hood Completely updated material for the 4.12.10 kernel Who This Book Is For If you are a kernel programmer with a knowledge of kernel APIs and are looking to build a comprehensive understanding, and eager to explore the implementation, of kernel subsystems, this book is for you. It sets out to unravel the underlying details of kernel APIs and data structures, piercing through the complex kernel layers and gives you the edge you need to take your skills to the next level. What You Will Learn Comprehend processes and files—the core abstraction mechanisms of the Linux kernel that promote effective simplification and dynamism Decipher process scheduling and understand effective capacity utilization under general and real-time dispositions Simplify and learn more about process communication techniques through signals and IPC mechanisms Capture the rudiments of memory by grasping the key concepts and principles of physical and virtual memory management Take a sharp and precise look at all the key aspects of interrupt management and the clock subsystem Understand concurrent execution on SMP platforms through kernel synchronization and locking techniques In Detail Mastering Linux Kernel Development looks at the Linux kernel, its internal arrangement and design, and various core subsystems, helping you to gain significant understanding of this open source marvel. You will look at how the Linux kernel, which possesses a kind of collective intelligence thanks to its scores of

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contributors, remains so elegant owing to its great design. This book also looks at all the key kernel code, core data structures, functions, and macros, giving you a comprehensive foundation of the implementation details of the kernel's core services and mechanisms. You will also look at the Linux kernel as well-designed software, which gives us insights into software design in general that are easily scalable yet fundamentally strong and safe. By the end of this book, you will have considerable understanding of and appreciation for the Linux kernel. Style and approach Each chapter begins with the basic conceptual know-how for a subsystem and extends into the details of its implementation. We use appropriate code excerpts of critical routines and data structures for subsystems.

Linux Networking Clearly Explained

To thoroughly understand what makes Linux tick and why it's so efficient, you need to delve deep into the heart of the operating system--into the Linux kernel itself. The kernel is Linux--in the case of the Linux operating system, it's the only bit of software to which the term "Linux" applies. The kernel handles all the requests or completed I/O operations and determines which programs will share its processing time, and in what order. Responsible for the sophisticated memory management of the whole system, the Linux kernel is the force behind the legendary Linux efficiency. The new edition of Understanding the Linux Kernel takes you on a guided tour through the most significant data structures, many algorithms, and

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programming tricks used in the kernel. Probing beyond the superficial features, the authors offer valuable insights to people who want to know how things really work inside their machine. Relevant segments of code are dissected and discussed line by line. The book covers more than just the functioning of the code, it explains the theoretical underpinnings for why Linux does things the way it does. The new edition of the book has been updated to cover version 2.4 of the kernel, which is quite different from version 2.2: the virtual memory system is entirely new, support for multiprocessor systems is improved, and whole new classes of hardware devices have been added. The authors explore each new feature in detail. Other topics in the book include: Memory management including file buffering, process swapping, and Direct memory Access (DMA) The Virtual Filesystem and the Second Extended Filesystem Process creation and scheduling Signals, interrupts, and the essential interfaces to device drivers Timing Synchronization in the kernel Interprocess Communication (IPC) Program execution Understanding the Linux Kernel, Second Edition will acquaint you with all the inner workings of Linux, but is more than just an academic exercise. You'll learn what conditions bring out Linux's best performance, and you'll see how it meets the challenge of providing good system response during process scheduling, file access, and memory management in a wide variety of environments. If knowledge is power, then this book will help you make the most of your Linux system.

Mastering Linux Kernel Development

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Accompanying CD-ROM includes all RFC files mentioned in the book, the Linux source tree and sample protocol family module programs for running, configuring, and testing the NADA protocol family discussed in Ch. 10.

Linux Kernel Internals

Since the introduction of Linux version 1.2 in March 1995, a worldwide community has evolved from programmers who were attracted by the reliability and flexibility of this completely free operating system. Now at version 2.0, Linux is no longer simply the operating system of choice for hackers, but is being successfully employed in commercial software development, by Internet providers and in research and teaching. This book is written for anybody who wants to learn more about Linux. It explains the inner mechanisms of Linux from process scheduling to memory management and file systems, and will tell you all you need to know about the structure of the kernel, the heart of the Linux operating system. This New Edition: has been thoroughly updated throughout to cover Linux 2.0 shows you how the Linux operating system actually works so that you can start to program the Linux kernel for yourself introduces the kernel sources and describes basic algorithms and data structures, such as scheduling and task structure helps you to understand file systems, networking, and how systems boot The accompanying CD-ROM contains Slackware distribution 3.1 together with its

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complete source code, the Linux kernel sources up to version 2.0.27, the PC speaker driver, and a wealth of documentation. 0201331438B04062001

The Linux Programming Interface

“Probably the most wide ranging and complete Linux device driver book I’ve read.” --Alan Cox, Linux Guru and Key Kernel Developer “Very comprehensive and detailed, covering almost every single Linux device driver type.” --Theodore Ts’o, First Linux Kernel Developer in North America and Chief Platform Strategist of the Linux Foundation

The Most Practical Guide to Writing Linux Device Drivers Linux now offers an exceptionally robust environment for driver development: with today’s kernels, what once required years of development time can be accomplished in days. In this practical, example-driven book, one of the world’s most experienced Linux driver developers systematically demonstrates how to develop reliable Linux drivers for virtually any device. Essential Linux Device Drivers is for any programmer with a working knowledge of operating systems and C, including programmers who have never written drivers before. Sreekrishnan Venkateswaran focuses on the essentials, bringing together all the concepts and techniques you need, while avoiding topics that only matter in highly specialized situations. Venkateswaran begins by reviewing the Linux 2.6 kernel capabilities that are most relevant to driver developers. He introduces simple device classes; then turns to serial buses such as I2C and SPI; external buses such as PCMCIA, PCI,

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and USB; video, audio, block, network, and wireless device drivers; user-space drivers; and drivers for embedded Linux—one of today’s fastest growing areas of Linux development. For each, Venkateswaran explains the technology, inspects relevant kernel source files, and walks through developing a complete example. • Addresses drivers discussed in no other book, including drivers for I2C, video, sound, PCMCIA, and different types of flash memory • Demystifies essential kernel services and facilities, including kernel threads and helper interfaces • Teaches polling, asynchronous notification, and I/O control • Introduces the Inter-Integrated Circuit Protocol for embedded Linux drivers • Covers multimedia device drivers using the Linux-Video subsystem and Linux-Audio framework • Shows how Linux implements support for wireless technologies such as Bluetooth, Infrared, WiFi, and cellular networking • Describes the entire driver development lifecycle, through debugging and maintenance • Includes reference appendixes covering Linux assembly, BIOS calls, and Seq files

Learning Computer Architecture with Raspberry Pi

Learn to develop customized device drivers for your embedded Linux system
About This Book Learn to develop customized Linux device drivers Learn the core concepts of device drivers such as memory management, kernel caching, advanced IRQ management, and so on. Practical experience on the embedded side of Linux
Who This Book Is For This book will help anyone who wants to get started

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with developing their own Linux device drivers for embedded systems. Embedded Linux users will benefit highly from this book. This book covers all about device driver development, from char drivers to network device drivers to memory management. What You Will Learn Use kernel facilities to develop powerful drivers Develop drivers for widely used I2C and SPI devices and use the regmap API Write and support devicetree from within your drivers Program advanced drivers for network and frame buffer devices Delve into the Linux irqdomain API and write interrupt controller drivers Enhance your skills with regulator and PWM frameworks Develop measurement system drivers with IIO framework Get the best from memory management and the DMA subsystem Access and manage GPIO subsystems and develop GPIO controller drivers In Detail Linux kernel is a complex, portable, modular and widely used piece of software, running on around 80% of servers and embedded systems in more than half of devices throughout the World. Device drivers play a critical role in how well a Linux system performs. As Linux has turned out to be one of the most popular operating systems used, the interest in developing proprietary device drivers is also increasing steadily. This book will initially help you understand the basics of drivers as well as prepare for the long journey through the Linux Kernel. This book then covers drivers development based on various Linux subsystems such as memory management, PWM, RTC, IIO, IRQ management, and so on. The book also offers a practical approach on direct memory access and network device drivers. By the end of this book, you will be comfortable with the concept of device driver development and will be in a position

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to write any device driver from scratch using the latest kernel version (v4.13 at the time of writing this book). Style and approach A set of engaging examples to develop Linux device drivers

TCP/IP Illustrated, Volume 1

Nwely updated to include new calls and techniques introduced in Versions 2.2 and 2.4 of the Linux kernel, a definitive resource for those who want to support computer peripherals under the Linux operating system explains how to write a driver for a broad spectrum of devices, including character devices, network interfaces, and block devices. Original. (Intermediate)

Linux Device Drivers

It used to be that two laptops, sitting side by side, couldn't communicate with each other; they may as well have been a thousand miles apart. But that was then, before the advent of Zero Configuration Networking technology. This amazing cross-platform open source technology automatically connects electronic devices on a network, allowing them to interoperate seamlessly-without any user configuration. So now you don't have to lift a finger! Needless to say, it has completely changed the way people connect to devices and programs for printing,

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file sharing, and other activities. Zero Configuration Networking: The Definitive Guide walks you through this groundbreaking network technology, with a complete description of the protocols and ways to implement network-aware applications and devices. Written by two Zero Configuration Networking experts, including one of Apple's own computer scientists, the book covers more than just file sharing and printing. Zero Configuration Networking also enables activities such as music and photo sharing and automatic buddy discovery on Instant Messaging applications. In fact, Zero Configuration Networking can be used for virtually any device that can be controlled by a computer. And this handy guide has the inside scoop on all of its capabilities-and how you can easily apply them in your own environment. For the technically advanced, Zero Configuration Networking: The Definitive Guide examines the three core technologies that make up Zero Configuration Networking: Link-Local Addressing, Multicast DNS, and DNS Service Discovery. It also reviews a series of APIs, including C-API, Java API, CFNetServices, and Cocoa's NSNetServices. Whether you want to understand how iTunes works, or you want to network a series of laptops and other devices at your office for maximum efficiency, you'll find all the answers in this authoritative guide.

Linux Network Administrator's Guide

This soup-to-nuts collection of recipes covers everything you need to know to perform your job as a Linux network administrator, whether you're new to the job

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or have years of experience. With *Linux Networking Cookbook*, you'll dive straight into the gnarly hands-on work of building and maintaining a computer network. Running a network doesn't mean you have all the answers. Networking is a complex subject with reams of reference material that's difficult to keep straight, much less remember. If you want a book that lays out the steps for specific tasks, that clearly explains the commands and configurations, and does not tax your patience with endless ramblings and meanderings into theory and obscure RFCs, this is the book for you. You will find recipes for: Building a gateway, firewall, and wireless access point on a Linux network Building a VoIP server with Asterisk Secure remote administration with SSH Building secure VPNs with OpenVPN, and a Linux PPTP VPN server Single sign-on with Samba for mixed Linux/Windows LANs Centralized network directory with OpenLDAP Network monitoring with Nagios or MRTG Getting acquainted with IPv6 Setting up hands-free networks installations of new systems Linux system administration via serial console And a lot more. Each recipe includes a clear, hands-on solution with tested code, plus a discussion on why it works. When you need to solve a network problem without delay, and don't have the time or patience to comb through reference books or the Web for answers, *Linux Networking Cookbook* gives you exactly what you need.

Professional Linux Kernel Architecture

Linux Routers, Second Edition shows you exactly how to reduce your costs and

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extend your network with Linux-based routing. You'll find step-by-step coverage of software/hardware selection, configuration, management, and troubleshooting for today's key internetworking applications, including LANs, Internet/intranet/extranet routers, Frame Relay, VPNs, remote access, and firewalls. Extensive new coverage includes dynamic routing, Quality of Service, the current Linux kernel - even next-generation IPv6 routing.

Linux Kernel Networking

"Large-scale enterprise, cloud, and virtualized computing systems have introduced serious performance challenges. Now, internationally renowned performance expert Brendan Gregg has brought together proven methodologies, tools, and metrics for analyzing and tuning even the most complex environments. Systems Performance: Enterprise and the Cloud focuses on Linux® and Unix® performance, while illuminating performance issues that are relevant to all operating systems. You'll gain deep insight into how systems work and perform, and learn methodologies for analyzing and improving system and application performance. Gregg presents examples from bare-metal systems and virtualized cloud tenants running Linux-based Ubuntu®, Fedora®, CentOS, and the illumos-based Joyent® SmartOSTM and OmniTI OmniOS®. He systematically covers modern systems performance, including the "traditional" analysis of CPUs, memory, disks, and networks, and new areas including cloud computing and dynamic tracing. This

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book also helps you identify and fix the "unknown unknowns" of complex performance: bottlenecks that emerge from elements and interactions you were not aware of. The text concludes with a detailed case study, showing how a real cloud customer issue was analyzed from start to finish."--Back cover.

IA-64 Linux Kernel

The Linux Programming Interface (TLPI) is the definitive guide to the Linux and UNIX programming interface—the interface employed by nearly every application that runs on a Linux or UNIX system. In this authoritative work, Linux programming expert Michael Kerrisk provides detailed descriptions of the system calls and library functions that you need in order to master the craft of system programming, and accompanies his explanations with clear, complete example programs. You'll find descriptions of over 500 system calls and library functions, and more than 200 example programs, 88 tables, and 115 diagrams. You'll learn how to:

- Read and write files efficiently
- Use signals, clocks, and timers
- Create processes and execute programs
- Write secure programs
- Write multithreaded programs using POSIX threads
- Build and use shared libraries
- Perform interprocess communication using pipes, message queues, shared memory, and semaphores
- Write network applications with the sockets API

While The Linux Programming Interface covers a wealth of Linux-specific features, including epoll, inotify, and the /proc file system, its emphasis on UNIX standards

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(POSIX.1-2001/SUSv3 and POSIX.1-2008/SUSv4) makes it equally valuable to programmers working on other UNIX platforms. The Linux Programming Interface is the most comprehensive single-volume work on the Linux and UNIX programming interface, and a book that's destined to become a new classic.

Systems Performance

A guide to Linux networking covers such topics as TCP/IP, Apache, Samba, connecting with a serial line, running inetd superservers, logging in remotely, and setting up a nameserver.

Networking Systems Design and Development

BPF and related observability tools give software professionals unprecedented visibility into software, helping them analyze operating system and application performance, troubleshoot code, and strengthen security. BPF Performance Tools: Linux System and Application Observability is the industry's most comprehensive guide to using these tools for observability. Brendan Gregg, author of the industry's definitive guide to system performance, introduces powerful new methods and tools for doing analysis that leads to more robust, reliable, and safer code. This authoritative guide: Explores a wide spectrum of software and hardware

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targets Thoroughly covers open source BPF tools from the Linux Foundation iovisor project's bcc and bpftrace repositories Summarizes performance engineering and kernel internals you need to understand Provides and discusses 150+ bpftrace tools, including 80 written specifically for this book: tools you can run as-is, without programming — or customize and develop further, using diverse interfaces and the bpftrace front-end You'll learn how to use BPF (eBPF) tracing tools to analyze CPUs, memory, disks, file systems, networking, languages, applications, containers, hypervisors, security, and the Linux kernel. You'll move from basic to advanced tools and techniques, producing new metrics, stack traces, custom latency histograms, and more. It's like having a superpower: with Gregg's guidance and tools, you can analyze virtually everything that impacts system performance, so you can improve virtually any Linux operating system or application.

Cloud Native Data Center Networking

This introduction to networking on Linux now covers firewalls, including the use of ipchains and Netfilter, masquerading, and accounting. Other new topics in this second edition include Novell (NCP/IPX) support and INN (news administration).

Linux Bible

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More than 50 percent new and revised content for today's Linux environment gets you up and running in no time! Linux continues to be an excellent, low-cost alternative to expensive operating systems. Whether you're new to Linux or need a reliable update and reference, this is an excellent resource. Veteran bestselling author Christopher Negus provides a complete tutorial packed with major updates, revisions, and hands-on exercises so that you can confidently start using Linux today. Offers a complete restructure, complete with exercises, to make the book a better learning tool Places a strong focus on the Linux command line tools and can be used with all distributions and versions of Linux Features in-depth coverage of the tools that a power user and a Linux administrator need to get started This practical learning tool is ideal for anyone eager to set up a new Linux desktop system at home or curious to learn how to manage Linux server systems at work.

Linux Kernel in a Nutshell

Effectively integrating theory and hands-on practice, *Networking Systems Design and Development* provides students and IT professionals with the knowledge and skills needed to design, implement, and manage fully functioning network systems using readily available Linux networking tools. Recognizing that most students are beginners in the field of ne

The Definitive Guide to Linux Network Programming

Provides information on writing a driver in Linux, covering such topics as character devices, network interfaces, driver debugging, concurrency, and interrupts.

Introduction to Linux (Second Edition)

Covers all versions of UNIX, as well as Linux, operating systems that are used by the majority of Fortune 1000 companies for their mission-critical data. Offers more detail than other books on the file input/output aspects of UNIX programming. Describes implementation of UNIX filesystems over a thirty year period. Demonstrates VERITAS and other filesystem examples.

Linux Network Administrator's Guide

This book provides thorough knowledge of Linux TCP/IP stack and kernel framework for its network stack, including complete knowledge of design and implementation. Starting with simple client-server socket programs and progressing to complex design and implementation of TCP/IP protocol in Linux, this book provides different aspects of socket programming and major TCP/IP related algorithms. In addition, the text features netfilter hook framework, a complete

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explanation of routing sub-system, IP QOS implementation, and Network Soft IRQ. This book further contains elements on TCP state machine implementation, TCP timer implementation on Linux, TCP memory management on Linux, and debugging TCP/IP stack using lcrash

Linux Device Drivers

The IA-64 Linux kernel makes extraordinary power available to every Linux developer. In IA-64 Linux Kernel: Design and Implementation, the kernel project's leaders systematically present every major subsystem, introducing interfaces used by Linux to abstract platform differences, showing how these interfaces are used in IA-64, and illuminating key issues associated with Linux kernel operation on any platform. Covers processes, tasks, threads, virtual memory, I/O, symmetric multiprocessing, bootstrapping, and more.

Essential Linux Device Drivers

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programmer with a knowledge of kernel APIs and are looking to build a comprehensive understanding, and eager to explore the implementation, of kernel subsystems, this book is for you. It sets out to unravel the underlying details of kernel APIs and data structures, piercing through the complex kernel layers and gives you the edge you need to take your skills to the next level. What You Will Learn Comprehend processes and files—the core abstraction mechanisms of the Linux kernel that promote effective simplification and dynamism Decipher process scheduling and understand effective capacity utilization under general and real-time dispositions Simplify and learn more about process communication techniques through signals and IPC mechanisms Capture the rudiments of memory by grasping the key concepts and principles of physical and virtual memory management Take a sharp and precise look at all the key aspects of interrupt management and the clock subsystem Understand concurrent execution on SMP platforms through kernel synchronization and locking techniques In Detail Mastering Linux Kernel Development looks at the Linux kernel, its internal arrangement and design, and various core subsystems, helping you to gain significant understanding of this open source marvel. You will look at how the Linux kernel, which possesses a kind of collective intelligence thanks to its scores of contributors, remains so elegant owing to its great design. This book also looks at all the key kernel code, core data structures, functions, and macros, giving you a comprehensive foundation of the implementation details of the kernel's core services and mechanisms. You will also look at the Linux kernel as well-designed

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software, which gives us insights into software design in general that are easily scalable yet fundamentally strong and safe. By the end of this book, you will have considerable understanding of and appreciation for the Linux kernel. Style and approach Each chapter begins with the basic conceptual know-how for a subsystem and extends into the details of its implementation. We use appropriate code excerpts of critical routines and data structures for subsystems.

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