

High Performance Browser Networking What Every Web Developer Should Know About Networking And Web Performance

This complete guide to setting up and running a TCP/IP network is essential for network administrators, and invaluable for users of home systems that access the Internet. The book starts with the fundamentals -- what protocols do and how they work, how addresses and routing are used to move data through the network, how to set up your network connection -- and then covers, in detail, everything you need to know to exchange information via the Internet. Included are discussions on advanced routing protocols (RIPv2, OSPF, and BGP) and the gated software package that implements them, a tutorial on configuring important network services -- including DNS, Apache, sendmail, Samba, PPP, and DHCP -- as well as expanded chapters on troubleshooting and security. TCP/IP Network Administration is also a command and syntax reference for important packages such as gated, pppd, named, dhcpcd, and sendmail. With coverage that includes Linux, Solaris, BSD, and System V TCP/IP implementations, the third edition contains: Overview of TCP/IP Delivering the data Network services Getting started M Basic configuration Configuring the interface Configuring routing Configuring DNS Configuring network servers Configuring sendmail Configuring Apache Network security Troubleshooting Appendices include dip, pppd, and chat reference, a gated reference, a dhcpcd reference, and a sendmail reference This new edition includes ways of configuring Samba to provide file and print sharing on networks that integrate Unix and Windows, and a new chapter is dedicated to the important task of configuring the Apache web server. Coverage of network security now includes details on OpenSSH, stunnel, gpg, iptables, and the access control mechanism in xinetd. Plus, the book offers updated information about DNS, including details on BIND 8 and BIND 9, the role of classless IP addressing and network prefixes, and the changing role of registrars. Without a doubt, TCP/IP Network Administration, 3rd Edition is a must-have for all network administrators and anyone who deals with a network that transmits data over the Internet.

Summary Web Performance in Action is your companion guide to making websites faster. You'll learn techniques that speed the delivery of your site's assets to the user, increase rendering speed, decrease the overall footprint of your site, as well as how to build a workflow that automates common optimization techniques. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Nifty features, hip design, and clever marketing are great, but your website will flop if visitors think it's slow. Network conditions can be unpredictable, and with today's sites being bigger than ever, you need to set yourself apart from the competition by focusing on speed. Achieving a high level of performance is a combination of front-end architecture choices, best

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practices, and some clever sleight-of-hand. This book will demystify all these topics for you. About the Book Web Performance in Action is your guide to making fast websites. Packed with "Aha!" moments and critical details, this book teaches you how to create performant websites the right way. You'll master optimal rendering techniques, tips for decreasing your site's footprint, and technologies like HTTP/2 that take your website's speed from merely adequate to seriously fast. Along the way, you'll learn how to create an automated workflow to accomplish common optimization tasks and speed up development in the process. What's Inside Foolproof performance-boosting techniques Optimizing images and fonts HTTP/2 and how it affects your optimization workflow About the Reader This book assumes that you're familiar with HTML, CSS, and JavaScript. Many examples make use of Git and Node.js. About the Author Jeremy Wagner is a professional front-end web developer with over ten years of experience. Foreword by Ethan Marcotte. Table of Contents Understanding web performance Using assessment tools Optimizing CSS Understanding critical CSS Making images responsive Going further with images Faster fonts Keeping JavaScript lean and fast Boosting performance with service workers Fine-tuning asset delivery Looking to the future with HTTP/2 Automating optimization with gulp Chapter 8. Debugging h2; Web Browser Developer Tools; Chrome Developer Tools; Firefox Developer Tools; Debugging h2 on iOS Using Charles Proxy; Debugging h2 on Android; WebPagetest; OpenSSL; OpenSSL Commands; nghttp2; Using nghttp; curl; Using curl; h2i; Wireshark; Summary; Chapter 9. What Is Next?; TCP or UDP?; QUIC; TLS 1.3; HTTP/3?; Summary; Appendix A. HTTP/2 Frames; The Frame Header; DATA; DATA Frame Fields; DATA Frame Flags; HEADERS; HEADERS Frame Fields; HEADERS Frame Flags; PRIORITY; PRIORITY Frame Fields; RST_STREAM; SETTINGS; SETTINGS Parameters; PUSH_PROMISE

Rapid advances in networking technology have promoted a fully revised second edition of this successful introduction to communication networks.

A comprehensive guide to transforming boards and achieving best-practice governance in any organisation. When practising good governance, the board is the vital driver of organizational success, while fostering positive social impact and economic value creation. At all levels, executives around the world are faced with complexities rising from disruptive business models, new technologies, socio-economic changes, shifting political circumstances, and an array of other sources. High Performance Boards is the comprehensive manual for attaining best-in-class governance, offering pragmatic guidance on improving board quality, accountability, and performance. This authoritative volume identifies the four dimensions, or pillars, which are crucial for establishing and maintaining best-practice boards: the people involved, the information architecture, the structures and processes, and the group dynamics and culture of governance. This methodology can be applied to any board in the world, corporate or non-profit organization, regardless of size, sector,

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industry, or context. Readers are introduced to a fictitious senior board member – an amalgamation of board members from well-known organisations – and follow her as she successfully handles real-life challenges with effective governance. Drawn from the author's 20 years of practice and confidential work with boards across the world, this book: Demonstrates how high-performance boards innovate and refine their practices Discusses examples of board failures and challenges, including case studies from both for-profit and non-profit organisations including international organizations and state-owned agencies or even ministries Provides a proven framework to create best-in-class governance Includes a companion website featuring tools for board assessment and board practice High Performance Boards has inspired more than 3000 board members around the world. This book is essential reading for professionals and managers interested in governance and board members, senior managers, investors, lawyers, and students of governance.

Your Python code may run correctly, but you need it to run faster. Updated for Python 3, this expanded edition shows you how to locate performance bottlenecks and significantly speed up your code in high-data-volume programs. By exploring the fundamental theory behind design choices, High Performance Python helps you gain a deeper understanding of Python's implementation. How do you take advantage of multicore architectures or clusters? Or build a system that scales up and down without losing reliability? Experienced Python programmers will learn concrete solutions to many issues, along with war stories from companies that use high-performance Python for social media analytics, productionized machine learning, and more. Get a better grasp of NumPy, Cython, and profilers Learn how Python abstracts the underlying computer architecture Use profiling to find bottlenecks in CPU time and memory usage Write efficient programs by choosing appropriate data structures Speed up matrix and vector computations Use tools to compile Python down to machine code Manage multiple I/O and computational operations concurrently Convert multiprocessing code to run on local or remote clusters Deploy code faster using tools like Docker

A guide to putting cognitive diversity to work Ever wonder what it is that makes two people click or clash? Or why some groups excel while others fumble? Or how you, as a leader, can make or break team potential? Business Chemistry holds the answers. Based on extensive research and analytics, plus years of proven success in the field, the Business Chemistry framework provides a simple yet powerful way to identify meaningful differences between people's working styles. Who seeks possibilities and who seeks stability? Who values challenge and who values connection? Business Chemistry will help you grasp where others are coming from, appreciate the value they bring, and determine what they need in order to excel. It offers practical ways to be more effective as an individual and as a leader. Imagine you had a more in-depth understanding of yourself and why you thrive in some work environments and flounder in others. Suppose

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you had a clearer view on what to do about it so that you could always perform at your best. Imagine you had more insight into what makes people tick and what ticks them off, how some interactions unlock potential while others shut people down. Suppose you could gain people's trust, influence them, motivate them, and get the very most out of your work relationships. Imagine you knew how to create a work environment where all types of people excel, even if they have conflicting perspectives, preferences and needs. Suppose you could activate the potential benefits of diversity on your teams and in your organizations, improving collaboration to achieve the group's collective potential. Business Chemistry offers all of this--you don't have to leave it up to chance, and you shouldn't. Let this book guide you in creating great chemistry!

Uncover a digital trail of e-evidence by using the helpful, easy-to-understand information in *Computer Forensics For Dummies!* Professional and armchair investigators alike can learn the basics of computer forensics, from digging out electronic evidence to solving the case. You won't need a computer science degree to master e-discovery. Find and filter data in mobile devices, e-mail, and other Web-based technologies. You'll learn all about e-mail and Web-based forensics, mobile forensics, passwords and encryption, and other e-evidence found through VoIP, voicemail, legacy mainframes, and databases. You'll discover how to use the latest forensic software, tools, and equipment to find the answers that you're looking for in record time. When you understand how data is stored, encrypted, and recovered, you'll be able to protect your personal privacy as well. By the time you finish reading this book, you'll know how to:

- Prepare for and conduct computer forensics investigations
- Find and filter data
- Protect personal privacy
- Transfer evidence without contaminating it
- Anticipate legal loopholes and opponents' methods
- Handle passwords and encrypted data
- Work with the courts and win the case

Plus, *Computer Forensics for Dummies* includes lists of things that everyone interested in computer forensics should know, do, and build. Discover how to get qualified for a career in computer forensics, what to do to be a great investigator and expert witness, and how to build a forensics lab or toolkit. Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Summary HTTP/2 in Action is a complete guide to HTTP/2, one of the core protocols of the web. Because HTTP/2 has been designed to be easy to transition to, including keeping it backwards compatible, adoption is rapid and expected to increase over the next few years. Concentrating on practical matters, this interesting book presents key HTTP/2 concepts such as frames, streams, and multiplexing and explores how they affect the performance and behavior of your websites. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology HTTP—Hypertext Transfer Protocol—is the standard for exchanging messages between websites and browsers. And after 20 years, it's gotten a much-needed upgrade. With support for streams, server push, header

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compression, and prioritization, HTTP/2 delivers vast improvements in speed, security, and efficiency. About the Book HTTP/2 in Action teaches you everything you need to know to use HTTP/2 effectively. You'll learn how to optimize web performance with new features like frames, multiplexing, and push. You'll also explore real-world examples on advanced topics like flow control and dependencies. With ready-to-implement tips and best practices, this practical guide is sure to get you—and your websites—up to speed! What's Inside HTTP/2 for web developers Upgrading and troubleshooting Real-world examples and case studies QUIC and HTTP/3 About the Reader Written for web developers and site administrators. About the Authors Barry Pollard is a professional developer with two decades of experience developing, supporting, and tuning software and infrastructure. Table of Contents PART 1 MOVING TO HTTP/2 Web technologies and HTTP The road to HTTP/2 Upgrading to HTTP/2 PART 2 USING HTTP/2 HTTP/2 protocol basics Implementing HTTP/2 push Optimizing for HTTP/2 PART 3 ADVANCED HTTP/2 Advanced HTTP/2 concepts HPACK header compression PART 4 THE FUTURE OF HTTP TCP, QUIC, and HTTP/3 Where HTTP goes from here This handbook is for anyone responsible for a Web site, from the person running a personal site off a Linux PC at home up to large corporate site managers who wants to improve their performance right now.

Highlights innovations for building even more powerful browser apps including HTTP 2.0, XHR improvements, Server-Sent Events (SSEs), WebSocket, and WebRTC.

The book begins by teaching you how to capture audio and video streams from the browser using the Media Capture and Streams API. You will then create your first WebRTC application capable of audio and video calling. The book will also give you in-depth knowledge about signaling and building a signaling server in Node.js. While being introduced to the RTCDataChannel object, you will learn how it relates to WebRTC and how to add text-based chat to your application. You will also learn to take your application further by supporting multiple users through different technologies and scale its performance and security. This book will also cover several theories using full mesh networks, partial mesh networks, and multipoint control units. By the end of this book, you will have an extensive understanding of real-time communication and the WebRTC protocol and APIs.

A revised and updated edition offers comprehensive coverage of ECMAScript 5 (the new JavaScript language standard) and also the new APIs introduced in HTML5, with chapters on functions and classes completely rewritten and updated to match current best practices and a new chapter on language extensions and subsets. Original.

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Pick up where certification exams leave off. With this practical, in-depth guide to the entire network infrastructure, you'll

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learn how to deal with real Cisco networks, rather than the hypothetical situations presented on exams like the CCNA. Network Warrior takes you step by step through the world of routers, switches, firewalls, and other technologies based on the author's extensive field experience. You'll find new content for MPLS, IPv6, VoIP, and wireless in this completely revised second edition, along with examples of Cisco Nexus 5000 and 7000 switches throughout. Topics include: An in-depth view of routers and routing Switching, using Cisco Catalyst and Nexus switches as examples SOHO VoIP and SOHO wireless access point design and configuration Introduction to IPv6 with configuration examples Telecom technologies in the data-networking world, including T1, DS3, frame relay, and MPLS Security, firewall theory, and configuration, as well as ACL and authentication Quality of Service (QoS), with an emphasis on low-latency queuing (LLQ) IP address allocation, Network Time Protocol (NTP), and device failures

Modern web applications are built on a tangle of technologies that have been developed over time and then haphazardly pieced together. Every piece of the web application stack, from HTTP requests to browser-side scripts, comes with important yet subtle security consequences. To keep users safe, it is essential for developers to confidently navigate this landscape. In *The Tangled Web*, Michal Zalewski, one of the world's top browser security experts, offers a compelling narrative that explains exactly how browsers work and why they're fundamentally insecure. Rather than dispense simplistic advice on vulnerabilities, Zalewski examines the entire browser security model, revealing weak points and providing crucial information for shoring up web application security. You'll learn how to:

- Perform common but surprisingly complex tasks such as URL parsing and HTML sanitization
- Use modern security features like Strict Transport Security, Content Security Policy, and Cross-Origin Resource Sharing
- Leverage many variants of the same-origin policy to safely compartmentalize complex web applications and protect user credentials in case of XSS bugs
- Build mashups and embed gadgets without getting stung by the tricky frame navigation policy
- Embed or host user-supplied content without running into the trap of content sniffing

For quick reference, "Security Engineering Cheat Sheets" at the end of each chapter offer ready solutions to problems you're most likely to encounter. With coverage extending as far as planned HTML5 features, *The Tangled Web* will help you create secure web applications that stand the test of time.

Performance is critical to the success of any website, and help with using today's new tools is key. In this remarkable guide, 32 leading web performance experts offer practical tips, techniques, and advice for optimizing your site's user experience. Originally written for an online calendar, this collection of articles will inspire you to squeeze every ounce of performance from your site—whether you're a web developer, mobile developer, or web designer. Check the table of contents and you'll be convinced. In order of appearance, *Web Performance Daybook* authors include: Patrick Meenan Nicholas Zakas Guy Podjarny Stoyan Stefanov Tim Kadlec Brian Pane Josh Fraser Steve Souders Betty Tso Israel Nir Marcel Duran Éric Daspet Alois Reitbauer Matthew Prince Buddy Brewer Alexander Podelko Estelle Weyl Aaron Peters Tony

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Gentilcore Matthew Steele Bryan McQuade Tobie Langel Billy Hoffman Joshua Bixby Sergey Chernyshev JP Castro Pavel Paulau David Calhoun Nicole Sullivan James Pearce Tom Hughes-Croucher Dave Artz

Optimize the performance of your mobile websites and webapps to the extreme. With this hands-on book, veteran mobile and web developer Maximiliano Firtman demonstrates which aspects of your site or app slow down the user's experience, and what you can do to achieve lightning-fast performance. There's much at stake: if you want to boost your app's conversion rate, then tackling performance issues is the best way to start. Learn tools and techniques for working with responsive web design, images, the network layer, and many other ingredients—plus the metrics to check your progress. Ideal for web developers and web designers with HTML, CSS, JavaScript, and HTTP experience, this is your guide to superior mobile web performance. You'll dive into: Emulators, simulators, and other tools for measuring performance Basic web performance concepts, including metrics, charts, and goals How to get real data from mobile browsers on your real networks APIs and specs for measuring, tracking and improving web performance Insights and tricks for optimizing the first view experience Ways to optimize post-loading experiences and future visits Responsive web design and its performance challenges Tips for extreme performance to achieve best conversion rates How to work with web views inside native apps

Silicon photonics is beginning to play an important role in driving innovations in communication and computation for an increasing number of applications, from health care and biomedical sensors to autonomous driving, datacenter networking, and security. In recent years, there has been a significant amount of effort in industry and academia to innovate, design, develop, analyze, optimize, and fabricate systems employing silicon photonics, shaping the future of not only Datacom and telecom technology but also high-performance computing and emerging computing paradigms, such as optical computing and artificial intelligence. Different from existing books in this area, Silicon Photonics for High-Performance Computing and Beyond presents a comprehensive overview of the current state-of-the-art technology and research achievements in applying silicon photonics for communication and computation. It focuses on various design, development, and integration challenges, reviews the latest advances spanning materials, devices, circuits, systems, and applications. Technical topics discussed in the book include:

- Requirements and the latest advances in high-performance computing systems
- Device- and system-level challenges and latest improvements to deploy silicon photonics in computing systems
- Novel design solutions and design automation techniques for silicon photonic integrated circuits
- Novel materials, devices, and photonic integrated circuits on silicon
- Emerging computing technologies and applications based on silicon photonics

Silicon Photonics for High-Performance Computing and Beyond presents a compilation of 19 outstanding contributions from academic and industry pioneers in the field. The selected contributions present insightful discussions and innovative approaches to understand current and future bottlenecks in high-performance computing systems and traditional computing platforms, and the promise of silicon photonics to address those challenges. It is ideal for researchers and engineers working in the photonics, electrical, and computer engineering industries as well as academic researchers and graduate students (M.S. and Ph.D.) in computer science and engineering, electronic and electrical engineering, applied physics, photonics, and optics.

The Internet Book, Fifth Edition explains how computers communicate, what the Internet is, how the Internet works, and what services the Internet offers. It is designed for readers who do not have a strong technical background — early chapters clearly explain the terminology and concepts needed to understand all the services. It helps the reader to understand the technology behind the Internet, appreciate how the Internet can be used, and discover why people find it so exciting. In addition, it explains the origins of the Internet and shows the reader how rapidly it has grown. It also provides information on how to avoid scams and exaggerated marketing claims. The first section of the book

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introduces communication system concepts and terminology. The second section reviews the history of the Internet and its incredible growth. It documents the rate at which the digital revolution occurred, and provides background that will help readers appreciate the significance of the underlying design. The third section describes basic Internet technology and capabilities. It examines how Internet hardware is organized and how software provides communication. This section provides the foundation for later chapters, and will help readers ask good questions and make better decisions when salespeople offer Internet products and services. The final section describes application services currently available on the Internet. For each service, the book explains both what the service offers and how the service works. About the Author Dr. Douglas Comer is a Distinguished Professor at Purdue University in the departments of Computer Science and Electrical and Computer Engineering. He has created and enjoys teaching undergraduate and graduate courses on computer networks and Internets, operating systems, computer architecture, and computer software. One of the researchers who contributed to the Internet as it was being formed in the late 1970s and 1980s, he has served as a member of the Internet Architecture Board, the group responsible for guiding the Internet's development. Prof. Comer is an internationally recognized expert on computer networking, the TCP/IP protocols, and the Internet, who presents lectures to a wide range of audiences. In addition to research articles, he has written a series of textbooks that describe the technical details of the Internet. Prof. Comer's books have been translated into many languages, and are used in industry as well as computer science, engineering, and business departments around the world. Prof. Comer joined the Internet project in the late 1970s, and has had a high-speed Internet connection to his home since 1981. He wrote this book as a response to everyone who has asked him for an explanation of the Internet that is both technically correct and easily understood by anyone. An Internet enthusiast, Comer displays INTRNET on the license plate of his car.

This book constitutes the refereed proceedings of 3 workshops co-located with International Conference for High Performance Computing, Networking, Storage, and Analysis, SC19, held in Denver, CO, USA, in November 2019. The 12 full papers presented in this proceedings feature the outcome of the 6th Annual Workshop on HPC User Support Tools, HUST 2019, International Workshop on Software Engineering for HPC-Enabled Research, SE-HER 2019, and Third Workshop on Interactive High-Performance Computing, WIHPC 2019.

Deliver rich audio and video real-time communication and peer-to-peer data exchange right in the browser, without the need for proprietary plug-ins. This concise hands-on guide shows you how to use the emerging Web Real-Time Communication (WebRTC) technology to build a browser-to-browser application, piece by piece. The authors' learn-by-example approach is perfect for web programmers looking to understand real-time communication, and telecommunications architects unfamiliar with HTML5 and JavaScript-based client-server web programming. You'll use a ten-step recipe to create a complete WebRTC system, with exercises that you can apply to your own projects. Tour the WebRTC development cycle and trapezoid architectural model Understand how and why VoIP is shifting from standalone functionality to a browser component Use mechanisms that let client-side web apps interact with browsers through the WebRTC API Transfer streaming data between browser peers with the RTCPeerConnection API Create a signaling channel between peers for setting up a WebRTC session Put everything together to create a basic WebRTC system from scratch Learn about conferencing, authorization, and other advanced WebRTC features

High-quality images have an amazing power of attraction. Just add some stunning photos and graphics to your website or app and watch your user engagement and conversion numbers climb. It can be tricky, but with this practical guide, you'll master the many facets of delivering high performance images on the internet—without adversely affecting site performance. You'll learn the nuts and bolts of color

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theory, image formats, storage and management, operations delivery, browser and application behavior, the responsive web, and many other topics. Ideal for developers, this book also provides useful tips, tricks, and practical theory for processing and displaying powerful images that won't slow down your online product. Explore digital image theory and the different formats available Dive into JPEGs, SVG and vector images, lossless compression, and other formats Use techniques for downloading and rendering images in a browser, and for loading images on mobile devices and cellular networks Examine specific rendering techniques, such as lazy loading, image processing, image consolidation, and responsive images Take responsive images to the next level by using content negotiation between browser and server with the Client Hints HTTP standard Learn how to operationalize your image workflow Contributors include Colin Bendell, Tim Kadlec, Yoav Weiss, Guy Podjarny, Nick Doyle, and Mike McCall from Akamai Technologies.

With the ubiquitous diffusion of the IoT, Cloud Computing, 5G and other evolved wireless technologies into our daily lives, the world will see the Internet of the future expand ever more quickly. Driving the progress of communications and connectivity are mobile and wireless technologies, including traditional WLANs technologies and low, ultra-power, short and long-range technologies. These technologies facilitate the communication among the growing number of connected devices, leading to the generation of huge volumes of data. Processing and analysis of such "big data" brings about many opportunities, as well as many challenges, such as those relating to efficient power consumptions, security, privacy, management, and quality of service. This book is about the technologies, opportunities and challenges that can drive and shape the networks of the future. Written by established international researchers and experts, Networks of the Future answers fundamental and pressing research challenges in the field, including architectural shifts, concepts, mitigation solutions and techniques, and key technologies in the areas of networking. The book starts with a discussion on Cognitive Radio (CR) technologies as promising solutions for improving spectrum utilization, and also highlights the advances in CR spectrum sensing techniques and resource management methods. The second part of the book presents the latest developments and research in the areas of 5G technologies and Software Defined Networks (SDN). Solutions to the most pressing challenges facing the adoption of 5G technologies are also covered, and the new paradigm known as Fog Computing is examined in the context of 5G networks. The focus next shifts to efficient solutions for future heterogeneous networks. It consists of a collection of chapters that discuss self-healing solutions, dealing with Network Virtualization, QoS in heterogeneous networks, and energy efficient techniques for Passive Optical Networks and Wireless Sensor Networks. Finally, the areas of IoT and Big Data are discussed, including the latest developments and future perspectives of Big Data and the IoT paradigms.

This book constitutes the refereed proceedings of the 7th International Conference on High-Performance Computing and Networking, HPCN Europe 1999, held in Amsterdam, The Netherlands in April 1999. The 115 revised full papers presented were carefully selected from a total of close to 200 conference submissions as well as from submissions for various topical workshops. Also included are 40 selected poster presentations. The conference papers are organized in three tracks: end-user applications of HPCN, computational science, and computer science; additionally there are six sections corresponding to topical workshops.

How prepared are you to build fast and efficient web applications? This eloquent book provides what every web developer should know about the network, from fundamental limitations that affect performance to major innovations for building even more powerful browser applications—including HTTP 2.0 and XHR improvements, Server-Sent Events (SSE), WebSocket, and WebRTC. Author Ilya Grigorik, a web performance engineer at Google, demonstrates performance optimization best practices for TCP, UDP, and TLS protocols, and explains unique wireless and mobile network optimization requirements. You'll then dive into performance characteristics of technologies such as

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HTTP 2.0, client-side network scripting with XHR, real-time streaming with SSE and WebSocket, and P2P communication with WebRTC. Deliver superlative TCP, UDP, and TLS performance Speed up network performance over 3G/4G mobile networks Develop fast and energy-efficient mobile applications Address bottlenecks in HTTP 1.x and other browser protocols Plan for and deliver the best HTTP 2.0 performance Enable efficient real-time streaming in the browser Create efficient peer-to-peer videoconferencing and low-latency applications with real-time WebRTC transports

Isomorphic JavaScript, often described as the holy grail of web application development, refers to running JavaScript code on both the browser client and web application server. This application architecture has become increasingly popular for the benefits of SEO, optimized page load and full control of the UI, and isomorphic libraries are being used at companies like Walmart, Airbnb, Facebook, and Netflix. With this practical book, authors Jason Strimpel and Maxime Najim provide the knowledge you need to build and maintain your own isomorphic JavaScript apps. This book includes: Part 1 identifies different classifications of isomorphic JavaScript apps, and shows you how to set up a development environment Part 2 takes you from theory to practice by showing you how to build out your own isomorphic app Part 3 takes you through existing solutions in the market today, providing you with the knowledge you need to bring isomorphic solutions into your development workflow

High-Performance Computing using FPGA covers the area of high performance reconfigurable computing (HPRC). This book provides an overview of architectures, tools and applications for High-Performance Reconfigurable Computing (HPRC). FPGAs offer very high I/O bandwidth and fine-grained, custom and flexible parallelism and with the ever-increasing computational needs coupled with the frequency/power wall, the increasing maturity and capabilities of FPGAs, and the advent of multicore processors which has caused the acceptance of parallel computational models. The Part on architectures will introduce different FPGA-based HPC platforms: attached co-processor HPRC architectures such as the CHREC's Novo-G and EPCC's Maxwell systems; tightly coupled HRPC architectures, e.g. the Convey hybrid-core computer; reconfigurably networked HPRC architectures, e.g. the QPACE system, and standalone HPRC architectures such as EPFL's CONFETTI system. The Part on Tools will focus on high-level programming approaches for HPRC, with chapters on C-to-Gate tools (such as Impulse-C, AutoESL, Handel-C, MORA-C++); Graphical tools (MATLAB-Simulink, NI LabVIEW); Domain-specific languages, languages for heterogeneous computing (for example OpenCL, Microsoft's Kiwi and Alchemy projects). The part on Applications will present case from several application domains where HPRC has been used successfully, such as Bioinformatics and Computational Biology; Financial Computing; Stencil computations; Information retrieval; Lattice QCD; Astrophysics simulations; Weather and climate modeling.

Until recently, creating desktop-like applications in the browser meant using inefficient Ajax or Comet technologies to communicate with the server. With this practical guide, you'll learn how to use WebSocket, a protocol that enables the client and server to communicate with each other on a single connection simultaneously. No more asynchronous communication or long polling! For developers with a good grasp of JavaScript (and perhaps Node.js), author Andrew Lombardi provides useful hands-on examples throughout the book to help you get up to speed with the WebSocket API. You'll also learn how to use WebSocket with Transport Layer Security (TLS). Learn how to use WebSocket API events, messages, attributes, and methods within your client application Build bi-directional chat applications on the client and server with WebSocket as the communication layer Create a subprotocol over WebSocket for STOMP 1.0, the Simple Text Oriented Messaging Protocol Use options for older browsers that don't natively support WebSocket Protect your WebSocket application against various attack vectors with

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TLS and other tools Debug applications by learning aspects of the WebSocket lifecycle

Leading authorities deliver the commandments for designing high-speed networks There are no end of books touting the virtues of one or another high-speed networking technology, but until now, there were none offering networking professionals a framework for choosing and integrating the best ones for their organization's networking needs. Written by two world-renowned experts in the field of high-speed network design, this book outlines a total strategy for designing high-bandwidth, low-latency systems. Using real-world implementation examples to illustrate their points, the authors cover all aspects of network design, including network components, network architectures, topologies, protocols, application interactions, and more.

Want your web site to display more quickly? This book presents 14 specific rules that will cut 25% to 50% off response time when users request a page. Author Steve Souders, in his job as Chief Performance Yahoo!, collected these best practices while optimizing some of the most-visited pages on the Web. Even sites that had already been highly optimized, such as Yahoo! Search and the Yahoo! Front Page, were able to benefit from these surprisingly simple performance guidelines. The rules in High Performance Web Sites explain how you can optimize the performance of the Ajax, CSS, JavaScript, Flash, and images that you've already built into your site -- adjustments that are critical for any rich web application. Other sources of information pay a lot of attention to tuning web servers, databases, and hardware, but the bulk of display time is taken up on the browser side and by the communication between server and browser. High Performance Web Sites covers every aspect of that process. Each performance rule is supported by specific examples, and code snippets are available on the book's companion web site. The rules include how to: Make Fewer HTTP Requests Use a Content Delivery Network Add an Expires Header Gzip Components Put Stylesheets at the Top Put Scripts at the Bottom Avoid CSS Expressions Make JavaScript and CSS External Reduce DNS Lookups Minify JavaScript Avoid Redirects Remove Duplicates Scripts Configure ETags Make Ajax Cacheable If you're building pages for high traffic destinations and want to optimize the experience of users visiting your site, this book is indispensable. "If everyone would implement just 20% of Steve's guidelines, the Web would be adramatically better place. Between this book and Steve's YSlow extension, there's really no excuse for having a sluggish web site anymore." -Joe Hewitt, Developer of Firebug debugger and Mozilla's DOM Inspector "Steve Souders has done a fantastic job of distilling a massive, semi-arcane art down to a set of concise, actionable, pragmatic engineering steps that will change the world of web performance." -Eric Lawrence, Developer of the Fiddler Web Debugger, Microsoft Corporation Performance is critical to the success of any web site, and yet today's web applications push browsers to their limits with increasing amounts of rich content and heavy use of Ajax. In this book, Steve Souders, web performance evangelist at Google and former Chief Performance Yahoo!, provides valuable techniques to help you optimize your site's performance. Souders' previous book, the bestselling High Performance Web Sites, shocked the web development world by revealing that 80% of the time it takes for a web page to load is on the client side. In Even Faster Web Sites, Souders and eight expert contributors provide best practices and pragmatic advice for improving your site's performance in three critical categories: JavaScript—Get advice for understanding Ajax performance, writing efficient JavaScript, creating responsive applications, loading scripts without blocking other components, and more. Network—Learn to share resources across multiple domains, reduce image size without loss of quality, and use chunked encoding to render pages faster. Browser—Discover alternatives to iframes, how to simplify CSS selectors, and other techniques. Speed is essential for today's rich media web sites and Web 2.0 applications. With this book, you'll learn how to shave precious seconds off your sites' load times and make them respond even faster. This book contains six guest chapters contributed by Dion Almaer, Doug Crockford, Ben Galbraith, Tony Gentilcore, Dylan Schiemann, Stoyan Stefanov, Nicole

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Sullivan, and Nicholas C. Zakas.

Consumer health websites have garnered considerable media attention, but only begin to scratch the surface of the more pervasive transformations the Internet could bring to health and health care. *Networking Health* examines ways in which the Internet may become a routine part of health care delivery and payment, public health, health education, and biomedical research. Building upon a series of site visits, this book: Weighs the role of the Internet versus private networks in uses ranging from the transfer of medical images to providing video-based medical consultations at a distance. Reviews technical challenges in the areas of quality of service, security, reliability, and access, and looks at the potential utility of the next generation of online technologies. Discusses ways health care organizations can use the Internet to support their strategic interests and explores barriers to a broader deployment of the Internet. Recommends steps that private and public sector entities can take to enhance the capabilities of the Internet for health purposes and to prepare health care organizations to adopt new Internet-based applications.

During recent years a great deal of progress has been made in performance modelling and evaluation of the Internet, towards the convergence of multi-service networks of diverging technologies, supported by internetworking and the evolution of diverse access and switching technologies. The 44 chapters presented in this handbook are revised invited works drawn from PhD courses held at recent HETNETs International Working Conferences on Performance Modelling and Evaluation of Heterogeneous Networks. They constitute essential introductory material preparing the reader for further research and development in the field of performance modelling, analysis and engineering of heterogeneous networks and of next and future generation Internets. The handbook aims to unify relevant material already known but dispersed in the literature, introduce the readers to unfamiliar and unexposed research areas and, generally, illustrate the diversity of research found in the high growth field of convergent heterogeneous networks and the Internet. The chapters have been broadly classified into 12 parts covering the following topics: Measurement Techniques; Traffic Modelling and Engineering; Queueing Systems and Networks; Analytic Methodologies; Simulation Techniques; Performance Evaluation Studies; Mobile, Wireless and Ad Hoc Networks, Optical Networks; QoS Metrics and Algorithms; All IP Convergence and Networking; Network Management and Services; and Overlay Networks.

The book will follow a step-by-step tutorial approach to construct an application that allows video conferencing and calls between two browsers and a system for sharing files among a group. This book is ideal for developers new to the WebRTC standards who are interested in adding sensor-driven, real-time, peer-to-peer communication to their web applications. You will only need basic experience with HTML and JavaScript.

How prepared are you to build fast and efficient web applications? This eloquent book provides what every web

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developer should know about the network, from fundamental limitations that affect performance to major innovations for building even more powerful browser applications--including HTTP 2.0 and XHR improvements, Server-Sent Events (SSE), WebSocket, and WebRTC. Author Ilya Grigorik, a web performance engineer at Google, demonstrates performance optimization best practices for TCP, UDP, and TLS protocols, and explains unique wireless and mobile network optimization requirements. You'll then dive into performance characteristics of technologies such as HTTP 2.0, client-side network scripting with XHR, real-time streaming with SSE and WebSocket, and P2P communication with WebRTC. Deliver superlative TCP, UDP, and TLS performance Speed up network performance over 3G/4G mobile networks Develop fast and energy-efficient mobile applications Address bottlenecks in HTTP 1.x and other browser protocols Plan for and deliver the best HTTP 2.0 performance Enable efficient real-time streaming in the browser Create efficient peer-to-peer videoconferencing and low-latency applications with real-time WebRTC transports.

This book demystifies the amazing architecture and protocols of computers as they communicate over the Internet. While very complex, the Internet operates on a few relatively simple concepts that anyone can understand. Networks and networked applications are embedded in our lives. Understanding how these technologies work is invaluable. This book was written for everyone - no technical knowledge is required! While this book is not specifically about the Network+ or CCNA certifications, it is a way to give students interested in these certifications a starting point.

Summary Netty in Action introduces the Netty framework and shows you how to incorporate it into your Java network applications. You'll learn to write highly scalable applications without the need to dive into the low-level non-blocking APIs at the core of Java. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Netty is a Java-based networking framework that manages complex networking, multithreading, and concurrency for your applications. And Netty hides the boilerplate and low-level code, keeping your business logic separate and easier to reuse. With Netty, you get an easy-to-use API, leaving you free to focus on what's unique to your application. About the Book Netty in Action introduces the Netty framework and shows you how to incorporate it into your Java network applications. You will discover how to write highly scalable applications without getting into low-level APIs. The book teaches you to think in an asynchronous way as you work through its many hands-on examples and helps you master the best practices of building large-scale network apps. What's Inside Netty from the ground up Asynchronous, event-driven programming Implementing services using different protocols Covers Netty 4.x About the Reader This book assumes readers are comfortable with Java and basic network architecture. About the Authors Norman Maurer is a senior software engineer at Apple and a core developer of Netty. Marvin Wolfthal is a Dell Services consultant who has implemented mission-critical enterprise systems using Netty. Table of Contents PART 1

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NETTY CONCEPTS AND ARCHITECTURE Netty-asynchronous and event-driven Your first Netty application Netty components and design Transports ByteBuf ChannelHandler and ChannelPipeline EventLoop and threading model Bootstrapping Unit testing PART 2 CODECS The codec framework Provided ChannelHandlers and codecs PART 3 NETWORK PROTOCOLS WebSocket Broadcasting events with UDP PART 4 CASE STUDIES Case studies, part 1 Case studies, part 2

Covers topics including HTTP methods and status codes, optimizing proxies, designing web crawlers, content negotiation, and load-balancing strategies.

Summary JavaScript Application Design: A Build First Approach introduces JavaScript developers to techniques that will improve the quality of their software as well as their web development workflow. You'll begin by learning how to establish build processes that are appropriate for JavaScript-driven development. Then, you'll walk through best practices for productive day-to-day development, like running tasks when your code changes, deploying applications with a single command, and monitoring the state of your application once it's in production. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Book The fate of most applications is often sealed before a single line of code has been written. How is that possible? Simply, bad design assures bad results. Good design and effective processes are the foundation on which maintainable applications are built, scaled, and improved. For JavaScript developers, this means discovering the tooling, modern libraries, and architectural patterns that enable those improvements. JavaScript Application Design: A Build First Approach introduces techniques to improve software quality and development workflow. You'll begin by learning how to establish processes designed to optimize the quality of your work. You'll execute tasks whenever your code changes, run tests on every commit, and deploy in an automated fashion. Then you'll focus on designing modular components and composing them together to build robust applications. This book assumes readers understand the basics of JavaScript. What's Inside Automated development, testing, and deployment processes JavaScript fundamentals and modularity best practices Modular, maintainable, and well-tested applications Master asynchronous flows, embrace MVC, and design a REST API About the Author Nicolas Bevacqua is a freelance developer with a focus on modular JavaScript, build processes, and sharp design. He maintains a blog at ponyfoo.com. Table of Contents PART 1 BUILD PROCESSES Introduction to Build First Composing build tasks and flows Mastering environments and the development workflow Release, deployment, and monitoring PART 2 MANAGING COMPLEXITY Embracing modularity and dependency management Understanding asynchronous flow control methods in JavaScript Leveraging the Model-View-Controller Testing JavaScript components REST API design and layered service architectures

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