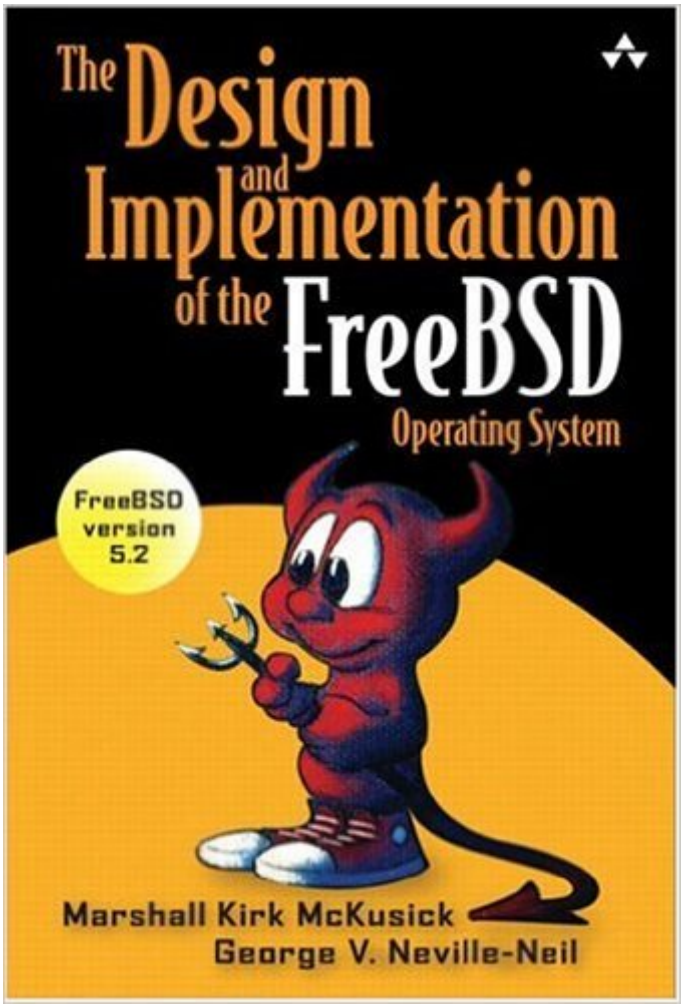
The Design And Implementation Of The FreeBSD Operating System



Synopsis

As in earlier Addison-Wesley books on the UNIX-based BSD operating system, Kirk McKusick and George Neville-Neil deliver here the most comprehensive, up-to-date, and authoritative technical information on the internal structure of open source FreeBSD. Readers involved in technical and sales support can learn the capabilities and limitations of the system; applications developers can learn effectively and efficiently how to interface to the system; system administrators can learn how to maintain, tune, and configure the system; and systems programmers can learn how to extend, enhance, and interface to the system. The authors provide a concise overview of FreeBSD's design and implementation. Then, while explaining key design decisions, they detail the concepts, data structures, and algorithms used in implementing the systems facilities. As a result, readers can use this book as both a practical reference and an in-depth study of a contemporary, portable, open source operating system. This book: Details the many performance improvements in the virtual memory system Describes the new symmetric multiprocessor support Includes new sections on threads and their scheduling Introduces the new jail facility to ease the hosting of multiple domains Updates information on networking and interprocess communication Already widely used for Internet services and firewalls, high-availability servers, and general timesharing systems, the lean quality of FreeBSD also suits the growing area of embedded systems. Unlike Linux, FreeBSD does not require users to publicize any changes they make to the source code.

Book Information

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Customer Reviews

I have been administering FreeBSD systems for four years, and I read 'The Design' to get a better understanding of the system 'under the hood.' This book is definitely not for beginners, and intermediate users like myself can become quickly overwhelmed. Nevertheless, I am very glad FreeBSD developers like McKusick and Neville-Neil took the time to document the kernel in this book.Before tackling 'The Design,' I recommend reading a book like 'Modern Operating Systems, 2nd Ed' by Andrew Tannenbaum. The reader needs to be familiar with OS concepts and terms like 'mutex,' 'semaphore,' 'locking,' and so on before reading 'The Design.' If for some reason you want to read 'The Design' but are not familiar with userland FreeBSD issues, I recommend Greg Lehey's 'Complete FreeBSD, 4th Ed.'I was unable to grasp all of the material in 'The Design,' since some of it will appeal only to those coding their own kernels or who are equipped to debate the FreeBSD core team's design choices. In that respect the book is well suited for a college course (perhaps a master's level?) where the content could be discussed by a professor and students. I was able to critically read the chapters covering networking (ch. 11-13) as I deploy FreeBSD partly for its robust TCP/IP stack. Reading 'The Design' helped me understand some of Robert Watson's recent posts concerning removal of the GIANT lock from the networking subsystem, for example.There are many other parts of the book which non-kernel developers will find accessible. Nearly every chapter features a well-written introduction to the technology at hand, such as memory management (ch. 5) or devices (ch. 7). I found various bits of history helpful, like the development of NFS (ch. 9) or UNIX itself (ch. 1).

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