



# Mac OS X and iOS Internals: To the Apple's Core

By Jonathan Levin



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**An in-depth look into Mac OS X and iOS kernels**

Powering Macs, iPhones, iPads and more, OS X and iOS are becoming ubiquitous. When it comes to documentation, however, much of them are shrouded in mystery. Cocoa and Carbon, the application frameworks, are neatly described, but system programmers find the rest lacking. This indispensable guide illuminates the darkest corners of those systems, starting with an architectural overview, then drilling all the way to the core.

- Provides you with a top down view of OS X and iOS
- Walks you through the phases of system startup—both Mac (EFi) and mobile (iBoot)
- Explains how processes, threads, virtual memory, and filesystems are maintained
- Covers the security architecture
- Reviews the internal APIs used by the system—BSD and Mach
- Dissects the kernel, XNU, into its sub components: Mach, the BSD Layer, and I/o kit, and explains each in detail
- Explains the inner workings of device drivers

From architecture to implementation, this book is essential reading if you want to get serious about the internal workings of Mac OS X and iOS.

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### Editorial Review

From the Back Cover

#### Peeling Apple's Operating Systems

System-level developers, kernel hackers, and intrigued Apple-lytes, take heed: This book lets you explore the nooks and crannies of Mac OS X and iOS, delving into the architecture of both systems, and picking up where the frameworks (and documentation) leave off. It offers clear, detailed explanation of the inner workings of Apple's systems, including proprietary APIs, most of which are documented for the first time.

As you traverse the architecture, moving from user to kernel mode, each layer and component is unraveled with annotated code samples and hands-on experiments, comparing and contrasting its implementation in both OSes. Topics include:

- The boot process: Mac's EFI, iOS's iBoot, and kernel startup
- Processes, threads, and virtual memory management
- Debugging and profiling, using DTrace, ptrace, and hidden system calls
- The system level APIs: POSIX calls, Mach traps, and OS X/iOS proprietary
- File system architecture, including VFS and HFS+
- Network architecture: from sockets to interfaces, and network drivers
- Kernel extensions, drivers, and a discussion of I/O Kit architecture
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## About the Author

Jonathan Levin is a longtime trainer and consultant focusing on the system and kernel levels of the 'Big Three'—Windows, Linux, and OS X, as well as their mobile derivatives. He is the founder and CTO of Technologeeks.com, a partnership of experts delivering advanced training on systems/kernel programming, debugging, and profiling.

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**Ronald Malone:**

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