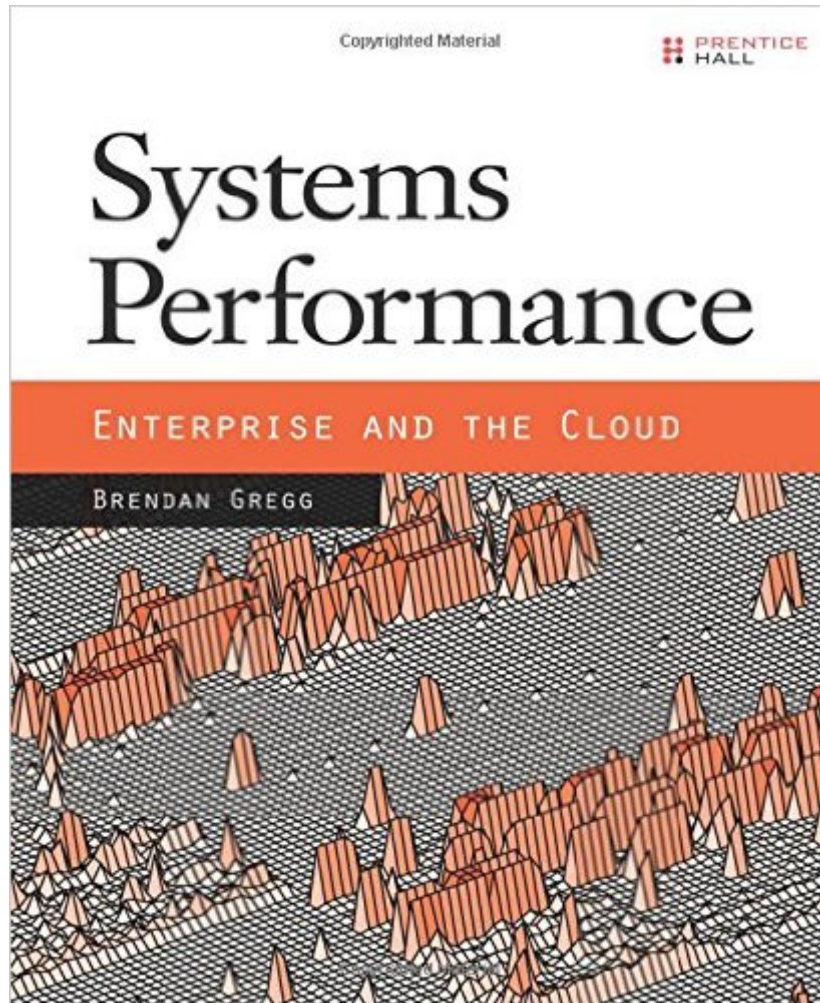


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Systems Performance: Enterprise And The Cloud



Synopsis

The Complete Guide to Optimizing Systems Performance Written by the winner of the 2013 LISA Award for Outstanding Achievement in System Administration 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® SmartOS®, 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 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. Coverage includes • Modern performance analysis and tuning: terminology, concepts, models, methods, and techniques • Dynamic tracing techniques and tools, including examples of DTrace, SystemTap, and perf • Kernel internals: uncovering what the OS is doing • Using system observability tools, interfaces, and frameworks • Understanding and monitoring application performance • Optimizing CPUs: processors, cores, hardware threads, caches, interconnects, and kernel scheduling • Memory optimization: virtual memory, paging, swapping, memory architectures, busses, address spaces, and allocators • File system I/O, including caching • Storage devices/controllers, disk I/O workloads, RAID, and kernel I/O • Network-related performance issues: protocols, sockets, interfaces, and physical connections • Performance implications of OS and hardware-based virtualization, and new issues encountered with cloud computing • Benchmarking: getting accurate results and avoiding common mistakes This guide is indispensable for anyone who operates enterprise or cloud environments: system, network, database, and web admins; developers; and other professionals. For students and others new to optimization, it also provides exercises reflecting Gregg™s extensive instructional experience.

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Customer Reviews

I found this to be an excellent resource. I've been reading it slowly in my spare time and on plane rides and it's a big book, I'm about half way now. The book is well written and I enjoy the breadth and depth of the topics. Each of which is covert from a near beginner to an almost expert level. Which is good for me because my understanding of the topics Brendan covers spans the same range, some I've barely heard of others I use almost every week. He does cover both Linux and Solaris which make some of the procedure descriptions a bit repetitive but we do have a 90-10 split of Linux and Solaris machines and I may get stuck on a Solaris box one of these days. My only criticism so far is the glossary could be more complete, I would like to have had EVERY acronym he uses in there because of the slow pace, I'm reading I don't remember the ones we don't use. Very common problem. I'm using it to increase my skills in tracking down performance problems in software I develop and deploy for an international scientific collaboration. Fortunately for me, I haven't had a hard performance problem since I started reading the book, but I'm not sure how quickly I could use such a tome to solve a specific problem. On the other hand I have used many things I've learned to gain a better understanding of things that are working. I like most of the reviewers so far would recommend it for anyone with even basic skills who is interested in understanding the issues affecting System Performance. I gave it 4 stars instead of 5 because of how broad an audience it addresses. While that's a good thing in that people can find what they need it also means there is a lot they don't need.

Long ago, the prerequisite UNIX performance book was Adrian Cockcroft's 1994 classic, *Sun Performance and Tuning: Sparc & Solaris*, later updated in 1998 as *Java and the Internet*. As Solaris evolved to include the invaluable DTrace observability features, new essential performance references have been published, such as *Solaris Performance and Tools: DTrace and MDB Techniques for Solaris 10 and OpenSolaris* (2006) by McDougal, Mauro, and Gregg, and *DTrace: Dynamic Tracing in Oracle Solaris, Mac OS X and FreeBSD* (2011), also by Mauro and Gregg. Much has occurred in Solaris Land since those books appeared, notably Oracle's acquisition of Sun Microsystems in 2010 and the demise of the OpenSolaris community. But operating system technologies have continued to improve markedly in recent years, driven by stunning advances in multicore processor architecture, virtualization, and the massive scalability requirements of cloud computing. A new performance reference was needed, and I eagerly waited for something that thoroughly covered modern, distributed computing performance issues from the ground up. Well, there's a new classic now, authored yet again by Brendan Gregg, former Solaris kernel engineer at Sun and now Lead Performance Engineer at Joyent. *Systems Performance: Enterprise and the Cloud* is a modern, very comprehensive guide to general system performance principles and practices, as well as a highly detailed reference for specific UNIX and Linux observability tools used to examine and diagnose operating system behaviour.

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