

**100 NEW
HACKS**

LINUX SERVER HACKS

Volume Two

*Tips & Tools for
Connecting, Monitoring,
and Troubleshooting*



O'REILLY®

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Linux Server Hacks, Volume Two

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Linux Server Hacks, Volume Two

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Credits

About the Authors

Bill von Hagen has been a Unix system administrator for 20 years and a Linux fanatic since 1993. He has also worked as a systems programmer, product manager, writer, application developer, drummer and content manager.

Bill has written or cowritten books on such topics as Linux filesystems, SUSE Linux, Red Hat Linux, GCC, SGML, Mac OS X, Linux system administration, and hacking the TiVo. He has written numerous articles on Linux, Unix, and open source topics for publications including *Linux Magazine*, *Linux Journal*, *Linux Format*, and *Mac Format*. An avid computer collector specializing in workstations, he owns more than 200 computer systems and wants more. You can reach him at vonhagen@vonhagen.org.

Brian K. Jones (Jonesy) has been a Unix and Linux system and network administrator for six years. He has also held positions and consulted in the capacity of database administrator, web developer, project manager, instructional speaker, technical writer and editor, and studio musician, for clients large and small.

In the past, Brian has written extensively on topics revolving around Linux and open source software for Linux.com, *Newsforge*, and *Linux Magazine*, and he has served as author and Editor-in-Chief of *php|architect* magazine. In his copious free time (right), Brian enjoys playing billiards and guitar, woodworking, and writing code. He has worked as a system and network administrator for the computer science department at Princeton University since 2001, and as a part-time infrastructure computing consultant since 2000. You can reach him at jonesy@linuxlaboratory.org.

Contributors

The following people contributed their writing, code, and inspiration to *Linux Server Hacks, Volume Two*:

- Jon Fox [[Hacks #33](#) and [#62](#)] (jon.fox@gnu.org.uk) is a Linux user and free software advocate. He's been using Linux since 1996.
- Tom Limoncelli [[Hack #45](#)] has over 15 years of system administration experience and has been teaching workshops on time management at conferences since 2003. Tom has authored *Time Management for System Administrators* (O'Reilly) and *The Practice of System and Network Administration* (Addison Wesley). Outside of work, Tom has won awards for his activism in gay/bi/lesbian rights and now helps progressive causes to use technology to further their goals.
- Lance Tost has been a Linux user since the 0.98 kernel days, while he earned his B.S. in Computer Science. He has held programming, DBA, and, Unix administration positions. Lance is a Red Hat Certified Engineer as well as a Solaris Certified System Administrator. Lance contributed [[Hacks #29](#) , [#41](#) , [#48](#) , [#59](#) , [#63](#) , and [#72](#)].
- Brian Warshawsky is an enthusiastic proponent of all things Linux and open source. His main interests include security, wireless networking, and finding new applications for the Linux operating system. By day he is a professional Unix/Linux system administrator, and by night he is a technical writer and avid mountain biker. He lives in Virginia with his soon-to-be wife Jennifer, his loyal dog Max, and his much less loyal cat Jackie. Brian contributed [[Hacks #19](#) , [#55](#) , [#64](#) , [#66](#) , [#67](#) , [#73](#) , [#75](#) , [#76](#) , [#79](#) , [#85](#) , [#86](#) , and [#87](#)].
- David Brickner [[Hack #42](#)] is not a Linux server administrator, but as a Gentoo user, he has learned a couple of things about compiling software. David believes Linux will be the dominant desktop operating system in the near future, and to encourage its adoption, he has written *Test Driving Linux* and *Linux Desktop Pocket Guide*, both from O'Reilly.

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Preface

Both authors of this book have been system administrators for a while. When the opportunity to write this book came about, we initially focused on cool hacks we'd developed or used in our server and system administration careers. We also asked friends, who asked their friends, and we were therefore able to get some great contributions from others to augment the things that we'd come up with. Everybody has problems they like to solve. Bill likes distributed authentication, undeleting and recovering files, and tweaking filesystems in general. Brian likes making admin tasks more efficient, reliable, and repeatable; has a bucketload of cool scripts to do various tasks; and loves getting and using data from remote sources. And every sysadmin has favorite techniques for solving problems, so Hack is to Hacker as Cool Tip or Technique is to Server or System Administrator. Sysadmin hacks are essentially clever ways of approaching whatever problem you're trying to solve, whether it's figuring out how to recover lost data, trying to collect information from distributed clients in one place so that you can easily see the big picture or anything else that comes up.

As we worked on this book, thinking about cool server and sysadmin hacks mutated into thinking about general tips and tricks that we found useful to simplify our lives as system administrators. We also noticed that there weren't really any books available along the lines of "Things We Wish Previous System Administrators Had Told Us." Leaving aside obvious questions like "where is the key to the RAID array" and "what was the root password on *<insert hostname here>*," we decided to "hack the Hacks series" a bit and incorporate some general sysadmin information, tips, and tricks as another of this book's primary themes. This means that we provide a bit more background material than you ordinarily see in Hacks books. You're not going to hurt our feelings if you skip over things you already know, but we hope that all the material will be found useful by some of our readers. We could have used it years ago, and as Mr. Rogers used to say, "It's nice to share."

Sometimes, too much software and too many choices can be a problem. Should we use MTRG, Ethereal, EtherApe, or some other application to monitor network traffic? Should we create logical volumes using linear RAID, LVM, LVM2, or EVMS? Should we do our resumes in TeX, LaTeX, troff, lout, SGML, or XML? You get the idea. If you need to solve a problem but don't know what tool to select from among the myriad choices available, you can spend exponentially more time selecting the right software and ramping up than you do actually solving the problem. For that reason, a book on task-oriented solutions to common problems has been a lot of fun to write, and it should save you many an overnight Google session—as well as providing information that works together and is up to date at the time of writing. All the hacks in this book are techniques that we've used at various times and that we view as time-and hassle-savers that are usually downright fun and cool.

Aside from the "too much software" issue just mentioned, a related concept (and the deep, dark secret of open source) is that not all open source projects are "finished"—ever. (For God's sake, don't tell Microsoft!) Not only do you have many, many choices in the open source space, but the ones you find may do only 95% of what you want, missing on the truly critical 5%. Though there's a lot of really cool-looking, whizzy open source software out there, sometimes the zip gun that reliably fires one bullet using a rubber band is preferable to the chromed fusion-powered death ray that works only 75% of the time—thus books like this one, in which people explain how to accomplish things using packages they've actually used and often still depend on, even if the packages aren't perfect. The tools discussed in these hacks are generally good additions to anyone's toolbox/ library of tips and tricks—and we'll show you how to use them for a variety of purposes.

Again, rather than just explaining how to do specific tasks, we've tried to provide a little background

and context for our approach. This is a book of hacks, but you deserve a little bit of extra info to put the hacks, tools, and solutions in the right context. Where possible, we've also identified other packages and procedures that may accomplish the same goal, but we focus on our preferred solutions for different types of problems.

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