



Linux Performance Tuning

For every rule there seems to be an exception—at least it seems that way to me. In my column last month, I described how the software industry as a whole has only recently become knowledgeable about performance testing. In this case, it seems that the exception is with respect to Linux. To be sure, there are individuals and small groups who have become increasingly knowledgeable about testing and tuning Linux, but there are far more individuals and groups with virtually no knowledge about Linux who have decided that deploying their Web sites via an Apache HTTP server on a FreeBSD or Fedora Linux platform is just too tempting to deny (i.e., free).

Even when it seemed that the prevailing notion was for performance testers to swoop in a couple of weeks before go-live day, run some tests and reassure everyone that everything was going to be okay, the whole story seemed to change when Linux servers were involved. All of the sudden the question became not “Can you reassure me that my system’s performance is adequate?” but rather “Can you tune our Linux servers?”

As I mentioned last month, most individuals and organizations are no longer asking for two weeks of reassurance before go-live day. Oddly, though, the last-minute “Can you tune our Linux servers?” approach not only



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seems not to have changed, it seems to have increased in frequency. The even more unfortunate part is that performance testers as a whole aren’t Linux administrators. Realistically, we don’t have time to be. As we’ll explore in more detail in a subsequent column, performance testers need to maintain their skills as what I refer to as a “midlevel everything”—and there is nothing “midlevel” about configuring and administering Linux for optimal performance.

So before I go any further, I have to come clean and tell you that I am no Linux guru. In fact, I know exactly enough about Linux to install it, navigate the file system, install some applications and explore configuration settings until I make such a mess out of things that I either need to reinstall or get an expert to undo whatever I did. And for those of you thinking, “Geez, I know more about Linux than this guy, why is he writing this article?”—you’d be right if I were actually going to try to tell you how to tune Linux. But I’m not. What I am going to do is share with you some good places to go to get the answers you need. I realized a long time ago that instead of trying to add “top-notch Linux administrator” to the already too-long list of areas of expertise that would be helpful for me to develop, that instead I’d add a list of quality resources to my bag of tricks.

Let’s start off with Web resources. My personal favorite is The Linux HTTP Benchmarking HOWTO (<http://www.xenoclast.org/doc/benchmark/HTTP-benchmarking-HOWTO/HTTP-benchmarking-HOWTO.html>). Admittedly, this is not the most up-to-date resource available, having been translated by Julian T.J. Midgley in the summer of 2001, but ignoring (or mentally updating) such things as version numbers and statements like “a modest 750 MHz Pentium III server” and “The requirement that a client should have to wait no longer than ‘n’ seconds for a response. (‘n’ is typically low, around 5-8 seconds),” this is a simply fantastic resource to start with. It’s well organized, concise and has detailed instructions that even I can follow, and it includes links to and instructions for using a variety free tools to assist with tasks like static and automated benchmarking. It also has its own references and resources. While it probably won’t answer all of your questions, the HOWTO definitely scores a four-star rating in the “most bang for the buck” category of my personal resources list.

Another oldie but goodie is simply titled “Performance tuning” (<http://www.kalamazoolinux.org/presentations/19991221/>). This is a slide deck created by Adam Williams, presumably for a class or a conference in late 1999. This presentation is significantly more advanced, and it provides the kind of information that will either help you achieve performance tuning bliss or start you down the path toward reinstallation (yes, *that* is a statement of personal experience). If you are very new to configuring Linux, you might want to steer clear of this one. If, however, you have been a Linux administrator for a while but feel that you could use some pointers in where to look and how to improve performance, this presentation may be for you. It is worth noting that this

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presentation speaks to Linux server tuning in general, not just Web server tuning.

For more up-to-date information, I recommend “Performance Tuning for Linux: An Introduction to Kernels” (<http://www.informit.com/articles/article.asp?p=389712&seqNum=1>). This is actually a sample chapter from the forthcoming book “Performance Tuning for Linux Servers,” by Sandra Johnson, Gerrit Huizenga and Badari Pulavarty (Prentice Hall PTP, 2005). In truth, this resource was forwarded to me by Mike Kelly when I mentioned to him that I was writing about resources for tuning Linux. I read the article and decided that the book was at least worth a trip to the local bookstore, a cup of coffee and a flip-through. I found myself particularly drawn to the sections that were subtitled “Performance Implications,” which is where I was immediately convinced that the authors had actually applied their knowledge to real-world applications, not just in academic labs or a friend’s basement.

While I was at the bookstore I also flipped through “Optimizing Linux Performance: A Hands-On Guide to Linux Performance Tools,” by Phillip G. Ezolt. This book was also published in 2005, and it looks like a book that virtually anyone who has managed to successfully get a server up and running could use for help with tuning. Again, it is focused on tuning the operating system, and not specifically on improving the performance characteristics of a Web server, but that is a matter of knowing which concepts to apply, which is where a performance tester can be of significant assistance.

Interestingly, while I was writing this article, I received a request from a publicist at Prentice Hall PTR to review “Performance Tuning for Linux Servers.” I haven’t received the book yet, but after looking at the table of

contents and the online sample chapters, I’m quite excited about having the opportunity to review it. There are, of course, quite a number of topics that detail areas that I have little to no direct experience with, but I’m particularly looking forward to Section II: Performance Analysis Tools—three chapters of info that I suspect will be filled with items that will make me say “I wish I’d known that a long time ago!” After I get through the book, I will include a short review in this column and include a link to the longer review that I have agreed to write in exchange for the book. If any of you

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happen to read this book before I publish my review, I encourage you to share your thoughts on it with me via e-mail (sbarber@perftestplus.com).

Of course, a resources list simply wouldn’t be complete without boards and forums. I have found that LinuxQuestions.org (<http://www.linuxquestions.org/>) and Linuxforums.org (<http://www.linuxforums.org/forum/>) seem to be among the most active, the most professional and the most likely to deliver useful answers among all the boards and forums I have stumbled upon. That said, it seems as though every computer-relat-

ed forum I visit these days has a permanent Unix/Linux thread, so it may serve you best to use whatever forum you use often enough that you won’t have the “newbie” icon next to your name (yes, it really does make a difference in the quality of answers you’ll get).

Naturally, you could always convince your boss to pay for you to attend a training class or twelve, but let’s face it: If your organization chose Linux/Apache to save license fees and didn’t hire a mega-guru Linux administrator, well, is your boss really going to cough up the money for training?

I’m willing to bet the answer is “probably not” when it comes to paying for training. Okay, maybe I’ve got a tainted point of view when it comes to training dollars. Even so, there is simply no way I could do justice to reviewing available training courses in a column this size. I will say that, personally, I learn a tremendous amount more from a mentor or coach who works with me, one-on-one, to help me grow in my specific areas of interest than I do by attending a canned class. Then again, I think the words I heard most often from my Linux mentor and good friend Chris Walters were “No, no! Don’t do that!” So maybe he would have recommended that I attend a class first.

I hope these resources from my own bag of tricks will serve you as well as they have served me. Maybe they will even help you and/or your organization move from “Can you tune our Linux servers?” to “Can you help us find what needs to be tuned on our Linux servers?” ☒