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Inside IBM

Dan Frye and the Linux Technology Center

by Stephen E. Harris, Publisher, ConsultingTimes



Exploring the JDS Linux Desktop

The sharp redirection of the IBM ship to the Ocean of Linux and Open Source has to be one of the most remarkable stories in industrial archives. Of course, many people were responsible for this change in course, but as co-author of the original strategy papers on both Linux and open source, Dan Frye has to be one of the chief navigators.

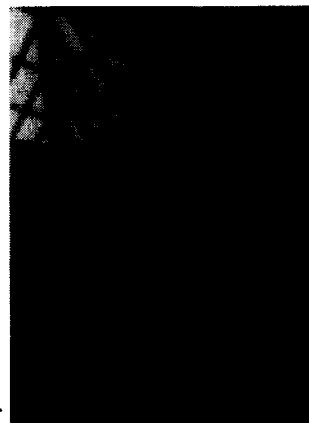
Now that the course is set for officers and crew, Dr. Frye has turned his attentions to coordinating open source developments with IBM and assuring smooth relations with the community at large. As Director of the Linux Technology Center, he oversees a variety of projects aimed at transforming Linux' fabulous technologic potential into practical business reality. Needless to say, we were delighted to talk to him.

CT: Can you please give our readers a little background on how IBM's Linux strategy came about?

Frye: Three and one-half years ago -- in the middle of '98 -- I was part of a corporate technology team that was looking at emerging technologies. I raised my hand and said "So what's our Linux strategy?" They said we didn't have one, so I got assigned to start working on it. I ended up co-authoring the original Linux and open source strategies, and I've been doing it ever since, in

one role or another. In the role I have now -- and this is something we started a while back -- I'm the director of the Linux Technology Center.

Our basic mission is to help make Linux better -- not make Linux better for IBM products, just make Linux better, period. So we have about 250 people in eight countries -- 25 cities -- around the world who work all in open source, as peers in the community. They're working on 50-60 different projects -- all aimed at making Linux better -- and most aimed at making Linux better for the enterprise in particular. So we work on volume management and scalability and security and systems management and networking -- all the various attributes of an operating system that you would normally work on if you were a commercial development shop. And I tell you, we have a great time doing it!



Our folks all work out in the community. Sometimes we bring technology from IBM -- where there is something missing or we think we have technology that's maybe better than what's out there -- we'll open source technology from one of IBM's software products. More often though, we just simply join an existing community in working on, say, ITB sets. We take some of the best programmers we've got -- they join the community, they start at the bottom, and they work their way up and contribute like other people. When we write good code it gets accepted, and when we write bad code it gets rejected, just like everybody else. We really do consider ourselves as peer members within the community.

CT: I guess we're talking about a virtual technology center, or is there some central place?

Frye: There is -- it's on the web. No, we didn't move anybody, we didn't co-locate anybody, we wanted skills from across IBM, and we have people from AIX, and OS2, and z/OS, and Websphere, and Tivoli [IBM's Technology Management software], and PTX, and Research, and so on. In an interconnected world, if the Linux community can work this way, we sure as heck can. There are some sites that have more people than others, Austin, Beaverton [OR], and Poughkeepsie in the US are the biggest sites, but we've got a dozen people in Bangalore India, we've got ten people in Böblingen Germany, half a dozen in Yamato Japan -- so yes, it's a virtual center in the sense that we're interconnected via the web and the telephone.

CT: Do you have a standard place where you do the testing?

Frye: That's a very insightful question -- I don't often get asked that question. For the individual products and projects, we test in the open source fashion, in which functional tests are the responsibility of the development team. So they test on the hardware they've got in their office or in local laboratories -- or we use the Open Source Development Laboratory in Beaverton.

We also have a system test group which is running an open source Linux Test Project. We do have a lab in Austin that's got a lot of big hardware, but you can log in from anywhere in the world and run things there.

CT: Does the code go through some centralized review before it's submitted?

Frye: Each team is different. Some teams review each other's code before it goes out, other individuals drop code directly. Just like the open source principal, it's your personal credibility that's at stake. So we don't force an internal review, but some teams do. By and large, a majority of our stuff gets accepted -- not always the first time, but that's true of everybody.

So no, we don't have an internal process. We want people to operate within the shared vision and techniques that the community has been using to develop Linux all along.

CT: And these are all internal IBM developers?

Frye: These are full-time IBM employees whose job is to make Linux better.

CT: How do they end up working for the Linux Technology Center, and are they then paid by you?

Frye: Sure, they're regular IBM employees and they report directly to me. IBM has become a very distributed team. It's quite common that people work in different locations than their managers.

CT: How do projects arrive at the center, and how do you select which ones to work on?

Frye: We look at what our customers want from Linux, by and large. Our customers will say "We want to run Linux on an 8-way SMP [Symmetric MultiProcessing] rather than a 4-way SMP." So we have people working on improving the scalability of Linux. Or a customer will say, "Linux security is pretty good, but we would like this additional feature."

Some things we work on because they're important to Linux in general, but we certainly have an eye out for how IBM customers want to use Linux. That's one of the good things about the open source community -- you work on things that are important to you. The community, on occasion, will ask us for help, and even if its not directly in IBM's interest we'll help if we can.

CT: I take it your projects are handled in much the same way as any other open source project?

Frye: Yes, except every open source community is different. So how you work with the kernel VMM team is different than how you work with the kernel IPV6 team. We tell our folks, "It's your job to learn how the community you're in works, and work within those rules." That's how you become effective -- you deliver things in the way that unique community

works.

CT: Are your projects posted publicly, as you're working on them?

Frye: Yup, every contribution.

CT: Do you have non-IBMers contributing to them?

Frye: Absolutely. We have non-IBMers contributing to many of our projects. In fact, in some of our projects non-IBMers have become core team members where they can make decisions. We host many projects on Sourceforge, we host projects on our own developerWorks, and my team has a web site that has links to all those projects. I'll give it to you: www.ibm.com/linux/ltc. From there it will take you to whatever thing you're interested in -- you'll go find the project. Everything we do is in public view.

There isn't a formalized review process -- that's the feedback we get from the community. Are people nervous? You bet they are. The first time they go out... but that's actually one of the driving factors for quality in the system. Talk to developers and they'll say "I was just about to hit the send on that patch, but I thought I'd look at it one more time." But over time, people become more comfortable.

CT: And vice versa, IBM must be pretty comfortable with the level of technical expertise and review in the community at large?

Frye: Yes. I consider it the world's largest and best software development team. Of course, not everybody in the community is a superstar, but there's world-class programming and world-class innovation coming out of the community at a rapid rate.

CT: You've touched on this already, but have there been particular of some of IBM's proprietary systems that you've ported over to Linux -- where you say "Oh wow, that works for the enterprise and we need it over here in Linux"?

Frye: Sure. Some examples would be enterprise volume management, journal file systems, a print architecture, and a number of serviceability tools. Those are the biggest examples, and then lots of other smaller stuff as well. But by and large, I think the majority of our projects are ones where the community is already working in the right direction, we just add arms and legs and skills to make it go faster.

CT: I know you work closely with the Free Standards Group.

Frye: We work with everybody. We work not only with the Free Standards Group, and the Free Software Foundation, and the Open Source Initiative, and KDE and GNOME -- we also work with most of our competition. We're not the only ones out there. So we have projects in common with HP or Intel, or NEC, or SGI ... down the list.

CT: Right now we have a number of Linux distributions, even on the mainframe. That's great, but I think we want to go towards standards-complaint distributions that we can rely on. Are we headed in that direction, and do you see Debian playing a role in that?

Frye: Yes. The Free Standards Group has got two standards working on board: the Linux Standards Base and li18nux [Linux Internationalization Initiative]. Those have reached a significant level of maturity with some announcements last month at LinuxWorld. Enough maturity so that all the major distributors have put in place roadmaps to get them standards-compliant over the next few months. It isn't perfect yet, for standards don't cover everything, but they're rapidly maturing, and the entire industry is behind it -- not only the distributions, but the ISVs [Independent Software Vendors], etc. There's not a huge amount of difference between the distributions today -- it's pretty small -- but that difference will rapidly decrease.

CT: So that's good news.

Frye: It's good news for ISV, it's good news for customers, it's good news for people certifying Linux, it's good news for the overall ecosystem.

CT: So eventually could we see any standards-compliant Linux distribution running on the IBM hardware spectrum?

Frye: Well, we typically work with a small number of server distributions that have the biggest market share. We work formally with Caldera, Red Hat, SuSE, and TurboLinux. We also do some other things with people like Mandrake. We have a very strong, informal, technical relationship with Debian. We're pretty happy with our distribution partners today -- we're not looking to expand them, although we're always open to opportunities.

CT: Now that Linux is fully accepted and supported, it seems like the business of the day is to actually deliver solutions to customers, large and small. So what is IBM doing to track and support developers, and as an application developer, how would I get involved?

Frye: We, the community, including IBM as a founding member, started something called the Eclipse organization last November. One hundred and fifty software tools vendors, including IBM, cofounded eclipse.org. IBM donated \$40 million of open source software to start it.

The goal of that rapidly growing community is to make Linux the de facto UNIX development platform. It, in its own right, is a major event.

CT: If I'm a traditional Linux developer and I want to go make a living, I should contact this organization?

Frye: If you want to make a living selling software that runs on top of Linux, you'd go and utilize Eclipse. Is that what you're asking -- you weren't talking about people working on Linux itself?

CT: No, I meant the application developers.

Frye: That is a set tools that is extensible, standards-based, and supported by a broad range of tools companies, that should make your life much easier for doing Linux application development.

CT: Does IBM encourage and sponsor particular third-party applications?

Frye: Absolutely. We track and help customers understand which business applications are ready on Linux today. At last count, I think we were up to 2,800 applications.

CT: These are listed at an IBM web site?

Frye: Yes, you can get to them through ibm.com/linux.

CT: How do you certify the products?

Frye: Well, the applications certify themselves on Linux. They say "we support Linux" et cetera. The ones that our customers care about, are the ones where we go off and accelerate their availability on Linux.

CT: How would you do that?

Frye: We go talk to them -- it's just like supporting any other operating system. We work with them on what customers want and what the business opportunities are. It's becoming a much easier conversation than it was 2-3 years ago, with the amount of money flowing through the Linux ecosystem and the number of customers demanding Linux solutions.

CT: That's interesting, because all you hear about in the business press is about the demise of Linux-based companies.

Frye: That is a very typical startup cycle. There were 20,000 phone companies in the US in the 1920s. You do get a lot of consolidation and change, but we have seen Linux as a monotonically increasing business opportunity since the start.

We haven't seen a drop. So yes, there is change in the business ecosystem, but it hasn't affected the fundamentals -- the customer values just get stronger.

CT: How about this for an inevitable question: are we any closer to the Linux desktop?

Frye: We're not really sure what will happen with the desktop, but it is continuing to mature and there are lots of successful users of the desktop. There are literally thousands of people inside of IBM using Linux as a desktop, but as for when it will get enough market share to have a viable business ecosystem around it, we don't know yet.

The server is clearly different. The Linux server is ready for the enterprise now. The desktop, we're not as sure. It's not ready for the typical non-technical user today. It works pretty well for technical users.

CT: Are there any other interesting technical developments you'd care to relate?

Frye: Just that Linux continues to mature at a rate faster than any operating system in history. There's a very vibrant, active community working on improving the current version of Linux 2.4, working on the next version of Linux 2.5, with innovation and participation across the industry. Most of the vendors have people working full-time on Linux, as do we, and we see nothing but a bright future here.

CT: And a bright future for Linux programmers as well?

Frye: Yes. We actually see a sea change going on in universities. A few years ago, what everybody had coming out of the university was Solaris experience, at one point or another. Now, every person with a computer science or computer engineering degree has got some level of Linux experience. They're not always learning Linux in the classroom yet, but Linux is what they're using for their weekend projects, their nighttime projects, what they're experimenting with. Many of them have open source experience before they come out of college. But they all have Linux experience.

CT: Well, that pretty much covers all our questions. Thank you very much for taking the time to talk to us.

Frye: Thank you Steve.

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