Dedicated to supporting the
FreeBSD Project and community

Upcoming Events

LinuxFest Northwest
April 28-29, 2018
Bellingham, Washington

Rootconf 2018
May 11-12, 2018
Bangalore, India

BSDCan 2018 FreeBSD Developers Summit
June 6-7 , 2018
Ottawa, Ontario, Canada

BSDCan 2018
June 6-9, 2018
Ottawa, Ontario, Canada

FreeBSD Journal
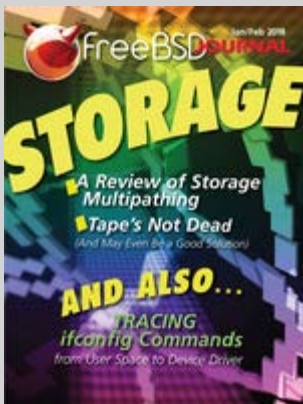
The January/February issue of the *FreeBSD Journal* is now available. Don't miss articles on Tracing ifconfig Commands, Storage Multipathing, and more.

New Feature! Browser-Based subscribers now have the ability to download and share PDFs of the articles!

Message from the Executive Director

Dear FreeBSD Community Member,
Welcome to our March, AKA Spring, Newsletter! In this month's issue, you will find out what kept our software developers so busy, the latest on our FreeBSD advocacy efforts, and how my drive to continue learning kept me busy at SCaLEx16.

Please take a moment to relax and read about our work over the past month!

Enjoy!
Deb

March 2018 Development Projects Update: Syzkaller Update

At the end of last year I mentioned the Syzkaller kernel system call fuzzer and the work done by one of the Foundation's co-op students to integrate and automate its use in FreeBSD. As a brief refresher, Syzkaller is a coverage-guided system call fuzzer. It invokes syscalls with arbitrary and changing inputs, and is intended to use code coverage data to guide changes to system call inputs in order to access larger and larger portions of the kernel in the search for bugs.

Last term's student focused largely on scripts to deploy and configure Syzkaller on Packet.net's hosting infrastructure, but did not get to the code coverage integration required for Syzkaller to be effective. This term co-op student Mitchell Horne has been adding code coverage support in FreeBSD for Syzkaller.

The Linux code coverage support for Syzkaller is known as kcov and was submitted by Dmitry Vyukov, Syzkaller's author. Kcov is purpose-built for Syzkaller:

kcov provides code coverage collection for coverage-guided

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fuzzing (randomized testing). Coverage-guided fuzzing is a testing technique that uses coverage feedback to determine new interesting inputs to a system. A notable user-space example is AFL (http://lcamtuf.coredump.cx/afl/). However, this technique is not widely used for kernel testing due to missing compiler and kernel support.

kcov does not aim to collect as much coverage as possible. It aims to collect more or less stable coverage that is function of syscall inputs. To achieve this goal it does not collect coverage in soft/hard interrupts and instrumentation of some inherently non-deterministic or non-interesting parts of kernel is disabled (e.g. scheduler, locking).

(from https://lwn.net/Articles/671640/)

Mitchell implemented equivalent functionality for FreeBSD - a distinct implementation, but modelled on the one in Linux. These patches are currently in review, as are minor changes to Syzkaller to use the new interface on FreeBSD.

We still have some additional work to fully integrate Syzkaller and run it on a consistent basis, but the brief testing that has been completed suggests this work will provide a very valuable improvement in test coverage and opportunities for system hardening: we tested Syzkaller with Mitchell's code coverage patch over a weekend. It provoked kernel crashes hundreds of times faster than without his work.

-- contributed by Ed Maste

Fundraising Update: The Power of Partnerships - Part 2

First, I want to say thank you to [NetApp](#) for becoming an Iridium Partner again this year! It's companies like NetApp, who recognize the importance of supporting our efforts, that allow us to continue to provide software improvements, advocate for FreeBSD, and help lead the release engineering and security efforts.

The more companies who benefit from FreeBSD provide financial contributions to the Foundation, the more we can confidently proceed with funding our major projects such as:

- Hiring a full-time engineer to implement more automated testing and efficient developer tools.

- Keeping a full-time staff member to oversee the release engineering efforts.

- Funding and overseeing software development projects to improve FreeBSD

- Keeping a full-time software engineer on staff to quickly jump in to fix issues, like the recent Meltdown/Spectre security issues.

- Providing FreeBSD advocacy around the world, to help recruit new contributors and users to the Project.

- Filling the role of Deputy Security Officer to help improve FreeBSD security

- Sponsoring conferences around the world to provide face-to-face working and learning opportunities for developers and users.

You can help us support all of the above, by encouraging your company to become a FreeBSD Foundation Partner. Find out more about this program here.

Finally, if you haven't donated this year, please consider making a donation now!

-- contributed by Deb Goodkin

Conference Recap: FOSSASIA 2018

FOSSASIA is possibly the largest open source event in Asia. The FreeBSD Foundation sponsored the conference and covered part of my travel expenses.

Our booth had a constant stream of traffic over the weekend and we handed out hundreds of FreeBSD stickers, pens and flyers. Many attendees of FOSSASIA had never heard of FreeBSD before and are now keen to start exploring and perhaps even contributing. By the end of the conference, there were FreeBSD stickers everywhere!

The conference had hundreds of hours of presentations but unfortunately, I was not able to attend any of them. I was handing out swag and encouraging new developers to join the project at our booth instead. Happily, I did find some time to present "Modern network servers" in the Kernel & Platform track on Friday afternoon. The presentation was well-attended and I got some interesting questions.

Most conference sessions were recorded so I look forward to spending several hours watching all the presentations I missed.

I also had many good hallway-track conversations with existing FreeBSD users and even managed to have dinner with some contributors. One particular hallway-track conversation led to an invitation to present FreeBSD at a "Women Who Code" evening in Kuala Lumpur later this week (Thursday 29th March). That will be a great way to spend my time between flights usefully!

I spent the days after the conference meeting companies who use (or

want to use) FreeBSD in Singapore.

I can barely wait for next year's FOSSASIA! Thanks to Hong Phuc and Mario and their amazing team of volunteers for running this awesome conference.

-- contributed by Philip Paeps

Conference Recap: SCaLE 16x

I had the opportunity to attend SCaLEx16 (Southern California Linux Expo) March 8-11, in Pasadena, California. Based on its name, one would think it was a Linux conference. While that may have been the focus in the beginning, today the conference is evolving into an open source conference with many other projects involved. If only they could remove the L from the name...

The Foundation sponsored a FreeBSD table in the expo hall that was staffed by Dru Lavigne, Warren Block, and me. Our purpose was to promote FreeBSD, and attract more users and contributors to the Project. We had a steady flow of people stopping by our table, asking inquisitive questions, and picking up some cool swag and FreeBSD handouts.

Thanks to Dru and Warren staffing the table for most of the conference, I was able to spend most of my time talking to other open source leaders. This was a wonderful opportunity to find out, not only what they are working on, but also to have insightful discussions on issues we all encounter. I also received suggestions on conferences where we should have a FreeBSD presence.

On my quest to learn more and contribute back to the Project, I p

articipated in a few classes to fill my toolbox of knowledge. The first one was the Embedded Apprentice Linux Engineer Hands On Workshop. We learned about embedded systems by downloading and running Linux on the PocketBeagle. Many of you may not know this, but in a previous life I was a firmware engineer working on disk drives. It was fun getting my hands dirty again (not that I understood everything!).

The second day I attended the all-day, Open Source Legal Training class. The class is meant for lawyers and law students, but a few other non-profit folks like myself, were allowed to attend. Some of the topics included Employment Contracts, Trademarks, Diversity, and Free Software Ethics. The presenters and panelists were all lawyers working in the open source world, coming from both large corporations like Microsoft and independent law firms. The information presented was helpful to me as we provide legal support for the Project, and I deal with legal issues running the Foundation.

On Saturday, I participated in the Linux
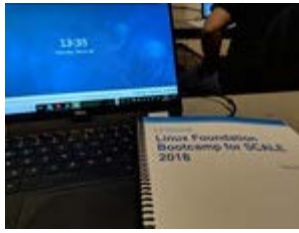
Installfest and Beginner Training. OK, I know you are thinking I'm a traitor for installing Ubuntu on my computer! However, if I'm going to advocate for FreeBSD and convince people to check out FreeBSD, I need to understand Linux too. Gaining this knowledge will help inform conversations on the advantages of FreeBSD - especially, when we're asked things such as "What's the difference between FreeBSD and Linux?," or "How is FreeBSD better than Linux?" In addition, the Foundation has been wanting to offer FreeBSD classes, and I wanted to see how at least one beginning OS class was run.

The installfest was frustrating because a few of us were having difficulty getting everything set up correctly to install and run Ubuntu. Part of this challenge was due to the fact that some of the other volunteers that were supposed to show up and help, were sick. So, I was secretly happy they didn't show up! The documentation for us to follow, wasn't easy to access, or well laid out. I appreciated the help from the two volunteers who were there.

The content of the Linux Training material was helpful, and will provide a good template for creating our own FreeBSD Bootcamp type of workshop. I also talked to a few instructors about the possibility of creating FreeBSD curriculum and teaching some classes for us. The goal is to provide curriculum to anyone who is interested in running an Introduction to FreeBSD or FreeBSD Bootcamp type of workshop.

Finally, the last day of the conference gave me a chance to sit down with people from other open source projects, and have some really thoughtful discussions. I have to say this was one of my most productive conferences for me, because I had a chance to attend and participate in some informative classes, and meet others from the open source community.

Next year, we have the opportunity to have a BSD track, similar to the BSD Devroom at FOSDEM. We are looking for some volunteers in Southern California who can help organize this one or two-day event and help us educate more people about the BSDs. Let us know if you would like to help with this effort.

-- contributed by Deb Goodkin

Roll Call! #WhoUsesFreeBSD

Many of you probably saw our post on social media asking Who Uses FreeBSD. Please help us answer this question to assist us in determining FreeBSD market share data, promote how companies are successfully using FreeBSD to encourage more companies to embrace FreeBSD, and to update the list of users on our website. Knowing who uses FreeBSD helps our contributors know where to look for jobs; knowing what universities teach with FreeBSD, helps companies know where to recruit, and knowing what products use FreeBSD helps us

determine what features and technologies to support.

Let us know about your company by emailing info@freebsdfoundation.org with your company name and how you are using FreeBSD.

New Hosting Partner: Oregon State University Open Source Lab

We are pleased to announce that the Oregon State University (OSU) Open Source Lab (OSL), which hosts infrastructure for over 160 different open source projects, has agreed to host some of our servers for FreeBSD development. The first server, which should be arriving shortly, is an HP Enterprise Proliant DL360 Gen10 configured with NVDIMM memory which will be initially used for further development and testing of permanent memory support in the kernel.

We would also like to thank Michael Ruan and his team at Hewlett Packard Enterprise (HPE) Taiwan for providing the Foundation access to a Proliant Gen9 system for some initial testing while we were waiting for our Gen10 system to arrive.

-- contributed by Scott Lamons