Dedicated to supporting the FreeBSD Project and community

Upcoming Events

Flourish! 2016
April 1-2, 2016
Chicago, IL

LinuxFest Northwest 2016
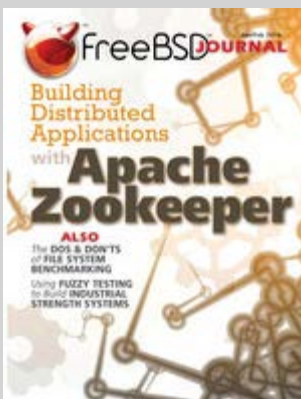April 23-24, 2016
Bellingham, WA

OSCON 2016
May 16-19, 2016
Austin, TX

BSDCan 2016
June 10-11, 2016
Ottawa, Canada

FreeBSD Journal

The January/February 2016 issue of the *FreeBSD Journal* is now available!

Don't miss articles on Using Fuzzy Testing to Build Industrial-Strength Systems, The Dos and Don'ts of File System Benchmarking, and more.

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

Message from the Executive Director

Dear FreeBSD Community Member,
What a landmark month March has been! After months of work, we debuted our new logo and website, and we're excited to take our identity to the next stage after 16 years. We also received our first Iridium Level donation of 2016. Thank you to Netapp for continuing their huge support of FreeBSD. On the development projects front, we embarked on the next phase of the arm64 project and more. Please take a minute to see what we've been up to this month, and thank you for helping us continue to enhance our support for the Project.
Deb

Development Projects Update

In March, Foundation staff and collaborators made dozens of commits to the FreeBSD source repository across a wide variety of projects. These included updates, bug fixes or improvements to man pages, the autofs automount daemon, the runtime loader, kernel module support, callouts, the ELF Tool Chain, Intel graphics drivers, process shared pthread locks, and more.

This month the Foundation embarked on the next phase of the FreeBSD/arm64 project with Andrew Turner, with the financial support of ARM. I'll focus on this project here. Regular readers of this newsletter will know that we've previously worked with Semihalf and Andrew Turner to bring up foundational arm64 support in FreeBSD. That phase of the project is complete, allowing FreeBSD 11.0 to include arm64 as a release architecture.

Andrew's work in this phase is focused on improving the performance of the FreeBSD/arm64 port as well as changes to ensure it is viable, stable and maintainable for the long term. Tasks included in the project are:

- 4-level page tables, in order to support systems with more than 128GB of RAM and multiprocessor systems with discontiguous address space

Why Choose FreeBSD?

- Transparent superpages, which increase performance and scalability by allowing translation lookaside buffer (TLB) translations to dynamically cover large physical memory regions
- Non-coherent busdma support, allowing FreeBSD to run on AArch64 implementations without cache-coherent DMA (including some lower-cost and reference platforms)
- Arm64 support for the the intrng project (common interrupt support infrastructure) and the NEW_PCIB PCI bus infrastructure update
- DTrace and hwpmc stability and performance improvements
- ACPI testing and integration
- Integration of optimized string functions and special-purpose CPU instructions
- Investigation of ZFS support

Cavium has also continued their support of the FreeBSD/arm64 port and is now collaborating directly with Semihalf on hardware-specific performance improvements and other development related to the ThunderX platform.

-- contributed by Ed Maste

Event Recap: FOSDEM 2016

On January 30th and 31st I attended FOSDEM in Brussels, Belgium. This was my second year attending FOSDEM and as part of that I gave a lightning talk on network measurement. Attendees to BSD conferences over the last couple of years may have seen the full version of this talk which discusses how to do proper network benchmarks as well as presenting measurements for various parts of the FreeBSD networking stack.

FOSDEM is a huge conference, drawing thousands of open source developers from across Europe and the rest of the world. It is held on the campus of the Univeriste Libre du Brussels and includes developer meetings, project tables, presentations and a lot of hallway discussions. To get an idea of the breadth of the conference look at the schedules for [Saturday](#) and [Sunday](#) which are still online. On Sunday there was a BSD Developer room in which I attended several talks. A Developer Room is meant for a like minded group to self-organize a set of talks related specifically to one area. Allan Jude gave a talk on "Interesting Things You Can do with ZFS" and Jean Sebastien Pedron presented on "Contributing to the Graphics stack on FreeBSD." The latter talk is already bearing fruit with more and modern graphics drivers appearing in FreeBSD for newer chipsets. Baptiste Daroussin presented the most recent work on "Reproducible Builds in FreeBSD Packages." The current work on reproducible builds is extremely important to the project because it allows us to better track where our package dependencies come from and to ameliorate security issues in upstream software, such as the SSL libraries. Both Baptiste and the Foundation's Director of Project Development, Ed Maste, have been involved in the discussions with other open source projects in this area.

Outside of the BSD room there were talks on pretty much any software topic imaginable. I concentrated on Security as well as Embedded Systems. I discovered a new (to me) embedded operating system, called NuttX, which is BSD licensed. While the technical discussion was

a bit too high level it was very amusing to watch the licensing discussion, as the presenter tried to explain to the crowd why the BSD license is far better for embedded than any of the GPL derivatives. It turns out that companies that want to build systems do not want to be hamstrung by the onerous forced sharing requirements of the GPL and therefore prefer BSD licensed code for their embedded systems.

While not attending talks, I visited several of the project tables that are scattered about the various buildings of the campus, including the Illumos folks who had all the OpenSolaris related releases in one place. We chatted about DTrace and ZFS and the other bits of code that we're sharing back and forth between FreeBSD and the Illumos groups.

During the conference a FreeBSD Developer Summit was held in the center of Belgium, about 30 minutes from the University Campus. I was unable to attend much of the summit due to my having to give my talk mid-day but I did arrive for the last hour or so and found a group of developers in conversation about various topics, including PF and IPv6. After the discussions ended we all went off to dinner, to continue on other technical topics. There is a plan for another Developer Summit next year at FOSDEM and I expect this one will draw even more folks as the Dev Summits seem to snowball into larger events once they're established.

For FreeBSD developers in, or with an inkling to go to Europe, FOSDEM is the place to both meet up with folks you know and also to find new people to attract to the FreeBSD Project.

-- contributed by George Neville-Neil

Faces of FreeBSD Series: Scott Long

Next up in the Faces of FreeBSD series reboot is Scott Long. You can find his full interview on the blog. Please take a minute and read more about Scott and stay tuned for future interviews with FreeBSD enthusiasts who are advocating for FreeBSD, improving FreeBSD, writing for FreeBSD, running conferences, and helping in other various ways.

Foundation Headquarters Has Moved!

After 16 years, the Foundation finally has a real office! We now have space for meetings, work, a FreeBSD playground (in the works), and a place to keep all of our cool swag. Our mailing address is now:

The FreeBSD Foundation

5757 Central Ave, Suite 201
Boulder, CO 80301

Fundraising Update: Omitting Words

I want to start out by saying thank you to NetApp for their Iridium Level donation! We are honored to feature them in the Donor Spotlight section of our new website for Platinum and higher level donors. Here's why they've been an Iridium Sponsor since 2007, "NetApp proudly supports the FreeBSD Foundation and community to fuel continued innovation and extend the reach of the software." We're extremely grateful for their generous donation and continued support for the work that we do.

I was talking to a Silver donor the other day, and I mentioned how we were waiting to hear whether we were accepted for a booth at an open source conference. In my message, I left out one important word - **Non-Profit**. We had applied for a **free** non-profit booth, as we have done over the past few years. Why was this omission so important? This donor believed we were planning on spending $10,000 to $20,000 on a booth. Wow! I knew that the Foundation would never spend that kind of money on a booth at any conference, but that conversation made me realize that we need to make sure our donors know that too. Donor perception can dictate what they will give us, so we need to be clear and transparent on how we spend their donations.

Fortunately, we ended up getting the free non-profit booth after all. Even though we are not spending $10k on a booth, we do incur costs associated with attending conferences. Your donations help us cover our travel costs, literature, and the giveaways we hand out to promote and educate attendees about FreeBSD. Your generosity also helps us cover the sponsorship fees that we pay for a few conferences like Grace Hopper and womENcourage.

This is one of many ways we are investing in the future of FreeBSD. Other areas we are investing in are software development to improve and add features to FreeBSD, recruiting to FreeBSD and implementing diversity efforts, developing FreeBSD classes and workshops, and purchasing equipment to improve FreeBSD infrastructure.

Check out the highlights of the work we did in March to support FreeBSD:

- The Foundation sponsored BSD-related conferences by being a Gold Sponsor at AsiaBSDCon 2016 and committing to being a BSDCan 2016 Gold Sponsor.

- We kicked off the next phase of the FreeBSD/arm64 port project.

- The Foundation funded VIMAGE project continued as planned.

- Our full-time staff worked on bug fixes and improvements that Ed

listed above, to help with the reliability and stability of FreeBSD.

- Our full-time release engineer supported preparations and testing for the on-time release of FreeBSD 10.3

- We met with companies to help facilitate collaboration with the Project and to discuss opportunities to improve and offer FreeBSD on their products.

- Continued to lead the Code of Conduct review efforts

- We launched our new logo and website! This will make it easier to get information on applying for grants, submitting project proposals, how to support FreeBSD and/or get involved, and find out what we are doing to support FreeBSD. Find out more about the changes we made here.

Next month we will be focusing on strategic planning and identifying the key areas we want to support to improve the FreeBSD operating system and ecosystem. Some of these areas include community support, developer infrastructure improvements, and new platforms. This work will be done by both our internal staff and outside funded projects. So, keep your eyes out for a call for project proposals!

You can make a difference today on the future of FreeBSD! Please consider making a donation to help us continue and grow our support for FreeBSD.

-- contributed by Deb Goodkin