FreeBSD Foundation February 2016 Update

The FreeBSD FOUNDATION

Dedicated to supporting the FreeBSD Project and Community

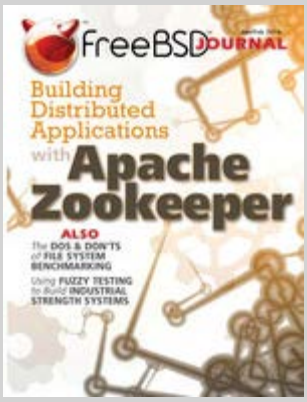
Upcoming Events

AsiaBSDCon 2016
March 10-13, 2016
Tokyo, Japan

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

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

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 articles!

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Message from the Executive Director

Dear FreeBSD Community Member,
This year brings about another leap year and the Foundation is taking full advantage of the extra day of February. This month we've sponsored and organized a Storage Summit, made progress on development projects and published the first FreeBSD Journal of 2016. I can't believe the Journal is in its 3rd year! Please take a moment to see what the Foundation has been up to and stay tuned for even more exciting news coming soon!

Deb

Development Projects Update

The POSIX threading implementation, commonly known as pthreads, is the standard multithreading API provided by most Unix-like operating systems, including FreeBSD. Pthreads provides several categories of services, including thread creation and control, mutexes, condition variables, and others.

The pthread API allows the creation of locks with a number of attributes, including control over priority inheritance, allowing recursion, and others. FreeBSD supports most of these attributes, but one feature that our implementation lacked is support for process-shared locks.

Process-shared locks allow a mutex to be operated on by any thread that has access to the memory containing the mutex, even if that thread is in another process. Many software packages make use of process-shared locks, although a fallback to a less desirable scheme is often provided.

Supporting process-shared locks in FreeBSD has been a challenge, as the type for our handle (e.g. pthread_mutex_t) is a pointer and the lock itself is allocated elsewhere. Attempting to share the handle with another process would simply result in an invalid pointer in that process. This could be addressed by changing the type to be the mutex object itself rather than a pointer, but this would introduce a critical ABI

See what others are saying about the Journal:

“Awesome! This is the best way to popularize FreeBSD!!” San Jose, California

“I’ve found it really practical, and great reading...it caters to all levels of users.” Brooklyn, NY

Why Choose FreeBSD?

"Tarsnap is an online backup service for BSD, Linux, OS X, and other "unix-like" operating systems. I started work on Tarsnap in 2006 when, as FreeBSD Security Officer, I was worried about the security of the information (such as unreleased security advisories) on my laptop; this resulted in a design for a backup system which inspired the tagline "online backups for the truly paranoid".

Tarsnap would never have existed without FreeBSD for another reason: As the name suggests, the Tarsnap software is based on the standard UNIX tar utility, and to that end I started development using the excellent bsdtar utility which was developed within FreeBSD in the preceding years. If I hadn't been able to reuse code from a tar utility, it would have taken me years longer to launch Tarsnap; and both the license (BSD) and code quality (excellent) of bsdtar were crucial to my ability to reuse it.

As well as reusing code from FreeBSD in the client software, Tarsnap relies entirely on FreeBSD for its server infrastructure. In addition to being easy to maintain and administer, FreeBSD's separation between the minimalist and

incompatibility -- older software would not run on newer versions of FreeBSD.

At the end of December, Foundation staff member Konstantin (Kostik) Belousov proposed a shared lock implementation on the FreeBSD-arch mailing list that implements shared locks without changing the ABI. This implementation uses a special marker as the lock object handle, and relies on kernel support to coordinate the shared memory holding the lock itself. This introduces some overhead, but it should not be significant in real-world applications.

Kostik committed the implementation to the FreeBSD subversion repository at the end of February so that it is available for further testing and benchmarking. This work will be available in FreeBSD 11.0 later this year.

-- contributed by Ed Maste

Event Recap: PortsCamp Taipei / Taiwan

This first PortsCamp was held in Taipei HackerSpace on January 15, 2016. We had 27 attendees including 5 FreeBSD committers.

The committers were: araujo@, lwhsu@, sunpoet@, kevlo@ and ijiliao@.

We had one sponsor, Gandi.net, who provided the venue as well as drinks and pizza. I made FreeBSD stickers that were shared with everybody too, for a cost of 578NT for 100 stickers.

The event started at 8PM and ended around 10PM, with two presentations. The first by Gandi where Thomas Kuiper introduced what Gandi's is doing using FreeBSD in our cloud platform. He also gave trial accounts for anyone who would like to try the FreeBSD images in their PaaS environment.

I gave the second presentation in which I provided an overview about the FreeBSD Project and how to contribute and become a FreeBSD committer. Slides can be found at: http://www.slideshare.net/araujobsd/portscamp-taiwan

I also provided a server with bhyve(8) with the latest FreeBSD-HEAD, ports tree and poudriere(8), that the attendees could access by ssh and make their experiments with FreeBSD ports.

Providing the server was a very good idea, as it allowed for a ready-to-use environment, saving time with setup. The server was an i7 with 16G of RAM. It was hosting 25VMs and the performance was pretty good.

We had 193 commits in our Ports Tree with the history log: Sponsored by: PortsCamp Taiwan

The attendees spent most of their time understanding how to use poudriere(8). Some continued work on projects they had already started. For example, one person was testing the glusterfs patches. We also had a dentist working on translating documentation to Chinese

internally-maintained "base" system and third-party "ports" code has proven to be extremely useful when responding to security issues: For the recent "shellshock" vulnerabilities, for example, I merely had to confirm that I had never installed bash from the ports tree. If bash had been installed on any of Tarsnap's servers, it would have required a much more time-consuming process to audit all of the ways that it might have been used -- and that process would have been required even if the eventual conclusion was that bash had never been used.

Tarsnap Backup Inc. is proud to support FreeBSD, both through my personal work (most recently, maintaining the FreeBSD/EC2 platform) and through its place as a Silver sponsor of the FreeBSD Foundation; and Tarsnap has directly benefited from projects and events which the FreeBSD Foundation has supported. Giving back is not merely an act of charity; it is truly an investment which yields an excellent return."

– Colin Percival, President, *Tarsnap Backup Inc.*

language.

All of the committers involved were very helpful with the attendees, and they spent most of their time answering questions as well as chatting with everyone.

We had a very good result, and we are planning to make a second PortsCamp in another city in Taiwan (Hsinchu). It probably will be held at National Taiwan University right after the AsiaBSDCon in March.

We want to change the approach of PortsCamp, and set up work groups, because we believe this will be more productive.

Pictures can be found at: https://flic.kr/s/aHsksPWo53

Check out other blogs and posts about PortsCamp:
by kevlo: http://wp.me/p1J5gU-2v
by miwi: http://miwi.cc/2016/01/taiwan-portscamp/

Update: Due to the success of the PortsCamp Taiwan, a PortsCamp Malaysia is in the works. Find out more at:
http://miwi.cc/2016/02/portscamp-malaysia/

-- contributed by Marcelo Araujo

ZFS and FreeBSD

ZFS has been making headlines lately, so it seems like the right time to talk about the longstanding relationship between FreeBSD and ZFS*.

For nearly seven years, FreeBSD has included a production quality ZFS implementation, making it one of the key features of the FreeBSD operating system. ZFS is a combined file system and volume manager. Decoupling physical media from logical volumes allows free space to be efficiently shared between all of the file systems. ZFS introduced unprecedented data integrity and reliability guarantees to storage on FreeBSD. ZFS supports varying levels of redundancy for tolerance of hardware failures and includes cryptographic checksums on all data to guard against corruption.

Allan Jude, VP of Operations at ScaleEngine and coauthor of *FreeBSD Mastery: ZFS*, said “We started using ZFS in 2011 because we needed to safely store a huge quantity of video for our customers. FreeBSD was, and still is, the best platform for deploying ZFS in production. We now store more than a petabyte of video using ZFS, and use ZFS Boot Environments on all of our servers.”

So why does FreeBSD include ZFS and contribute to its continued development? FreeBSD community members understand the need for continued development work as technologies evolve. OpenZFS is the truly open source successor to the ZFS project and the FreeBSD Project has participated in OpenZFS since its founding in 2013. FreeBSD developers and those from Delphix, Nexenta, Joyent, the ZFS on Linux project, and the Illumos project work together to continue

improving OpenZFS.

FreeBSD's unique open source infrastructure, copyfree license, and engaged community support the integration of a variety of free software components, including OpenZFS. FreeBSD makes an excellent operating system for servers and end users, and it provides a foundation for many open source projects and commercial products.

We're happy that ZFS is available in FreeBSD as a fully integrated, first class file system and wish to thank all of those who have contributed to it over the years.

**Want to share this article? The blog post can be found at:* here.

Fundraising Update: Lots of Progress in a Short Month!

Wow, this month went by quickly! I want to send out a big thank you to everyone who donated this month! We received over 100 individual donations, a Gold Level donation from NetFlix, and a Bronze Level donation from FlightAware for their sponsorship of the FreeBSD Storage Summit. Our 2015 financial reports will be posted later this week, along with our 2016 budget. We're running a few weeks behind on posting these reports because we transitioned to a new accounting firm in January. They are helping us automate some of our processes. Not only will we be more efficient going forward, but the automation will also translate into more resources that can work directly on our mission to support the community.

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

- Justin Gibbs headed up the FreeBSD Storage Summit in Santa Clara, CA. It was a great opportunity for developers to collaborate face-to-face on features related to storage and more.
- Our full-time release engineer continued work towards timely and reliable releases.
- Our full-time software engineers continued making FreeBSD more stable and reliable by fixing bugs across the OS.
- The Foundation-funded project VIMAGE (VNET) support for FreeBSD continued as planned.
- Foundation team members met with commercial users to help facilitate collaboration with FreeBSD developers.
- We worked together on 2016 project planning, including a plan to gather additional input from the community.

- We continued our work towards making our community more diverse and inclusive by leading the Code of Conduct process; building relationships with women in tech organizations; researching conferences to attend and universities to collaborate with, and researching and understanding unconscious bias better.

To support these efforts and more, we're reaching out to more commercial users to give back and investigating other revenue sources to help us reach our fundraising goal this year.

Your donation will help us support the OS that **empowers you with choice, control, freedom, and privacy**.

You can make a difference! Please donate today.

-- contributed by Deb Goodkin

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