FreeBSD Foundation August 2016 Update

FreeBSD FOUNDATION

Dedicated to supporting the FreeBSD Project and community

Upcoming Events

WomENcourage 2016
September 12-13, 2016
Linz, Austria

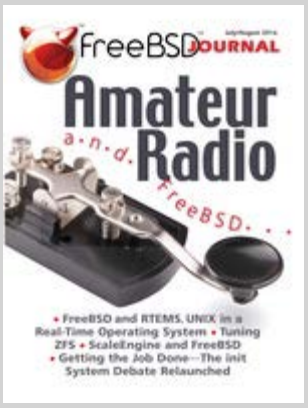
EuroBSDCon 2016
September 22-25, 2016
Belgrade, Serbia

OpenZFS 2016
September 26-27, 2016
San Francisco, CA

Ohio LinuxFest 2016
October 7-8, 2016
Columbus, OH

Grace Hopper Celebration of Women 2016
October 19-26, 2016
Houston, TX

FreeBSD Journal



The July/August issue of the *FreeBSD Journa*l is now available! Don't miss articles on Tuning ZFS, ScaleEngine and FreeBSD, and more.

New Feature! Browser-Based

Message from the Executive Director

Dear FreeBSD Community Member,
Normally, August is a slow month for companies, but not here at the Foundation! We were busy at the Cambridge Developer Summit, working non-stop preparing for the FreeBSD 11.0 release, implementing many changes and improvements to the operating system, creating new advocacy literature to hand out at upcoming conferences, and of course, fundraising.

Please take a minute or two to read through all the work we did this past month to support FreeBSD. Then share on social media and with your company to help us promote our work and encourage individuals and companies to make a financial contribution to help us continue our efforts.

Deb

Development Projects Update

I recently returned from the BSDCam FreeBSD Developer Summit, hosted by the University of Cambridge. One of the sessions was a status update and planning meeting for the FreeBSD tool chain. This presents a good opportunity to share some of the work currently in progress, from the FreeBSD community and work directly sponsored by the Foundation.

When I write “FreeBSD tool chain” I mean all of those components used to build, test and debug FreeBSD itself, third party software that forms part of FreeBSD via the ports collection, and other software that runs on FreeBSD.

The FreeBSD tool chain is pioneering in several aspects, while it unfortunately lags in others. The Foundation, and developers in the FreeBSD community, are working hard to ensure we return to having a modern and maintained tool chain in all regards.

subscribers now have the ability to download and share PDFs of the articles!

Sample Issue! If you've ever wanted to read through an entire issue of the FreeBSD Journal, now's your chance. Download the sample issue and be sure to share with your friends and colleagues.

Not a subscriber? Sign up today!

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?

"IXC (IntereXchange Carrier) is the Ukrainian VoIP system developer, that designs, develops, and sells a modern Softswitch and billing systems for businesses with a large capacity of users and extensive market coverage. The company created a unique complex solution consisting of modules such as high performance softswitch, real-time billing, user-friendly web-interface and more. It is well-known in more than 50 countries, and has become a top VoIP Softswitch vendor for wholesale business.

During the last 17 years, IXC has been trying to provide a competitive solution for VoIP business. Such technology requires a lot work in the areas of

Compiler
FreeBSD switched to Clang as the system compiler for the 32- and 64-bit Intel x86 and some ARM platforms in FreeBSD 10.0, released in January 2014. The compiler’s been updated several times since then, and the upcoming FreeBSD 11.0 release will include Clang 3.8.0. FreeBSD 11.0 also includes AArch64 (64-bit ARM) support using Clang.

FreeBSD developer Dimitry Andric is responsible for much of the recent work to keep Clang up-to-date in FreeBSD, and he now has an update to Clang 3.9.0 in progress. This will be added to the FreeBSD development branch, and should be available in FreeBSD 11.1.

Linker
One lagging component of the FreeBSD tool chain has been the linker. In FreeBSD we have a version of the GNU binutils utilities, including the linker, that’s almost a decade old. For some time we’ve been searching for a path forward, and one is now becoming available via lld, the linker in the LLVM family of projects.

As a part of the update to version 3.9.0 of the LLVM family projects in FreeBSD I have been working on making lld available for testing and experimentation. It is now nearly ready for use on the 64-bit Intel and ARM architectures, while more work is needed on others. There’s still much work to do, but we plan to use lld as the system linker for most architectures in FreeBSD 12.0.

Migrating to lld will allow us to introduce new functionality such as whole-program link time optimization (LTO), and can significantly reduce the time taken to link large libraries and applications.

Debugger
Another component in need of an update is the system debugger. I’ve been working on improving the FreeBSD port of lldb, the debugger in the LLVM family. It is now available and usable on the 64-bit Intel and all ARM architectures. There is ongoing work on additional functionality, bug fixes, and architecture support.

FreeBSD developer John Baldwin recently improved GDB, the GNU debugger, which is available in the FreeBSD ports tree. One significant addition is kernel debugging (kgdb), and the availability of these options will allow us to remove the outdated GDB in the base system.

Exception Unwind Library
The tool chain provides an “exception unwinding” library, used to handle runtime exceptions from languages such as C++. We now use LLVM’s libunwind implementation on selected CPU architectures, and in the future can take advantage of new functionality such as the compact unwind format, which reduces the size of exception handling tables in binaries and libraries.

There’s yet more work in progress on other tool chain components and other CPU architectures, and I’ll touch on that in future updates. The Foundation remains committed to helping bring modern and maintained

performance, fault tolerance and SLA guaranteeing. Therefore, the choice of an operating system that meets such requirements plays a major role.

The ability to work under high load is the key issue for VoIP service, and the FreeBSD sysctl service provides an opportunity to tune NIC performance to its maximum level. Such kind of configuration increases a number of concurrent calls up to 3000 and more.

The Ports infrastructure is an element that distinguishes the system from other Unix derivatives and is a powerful tool for building a software environment which suits our own needs. Last, but not least, we'd like to note the outstanding security. Such an aspect is hard to overestimate nowadays.

We annually test the operating systems of various Unix distributions. Each year, FreeBSD, starting from 4.X version, has been our primary OS.

We are honored to be a part of the large IT community that is working and developing FreeBSD."

– Evgeniy Gordashnik, VP Operations, IXC.

components to all aspects of the FreeBSD tool chain.

-- contributed by Ed Maste

Fundraising Update: Company Visits

I can't believe it's almost September, and summer is nearly over. Here in Boulder, kids are already back in school, and you can feel fall's approach with the coolness in the air. People are back from vacation, and we're ready to go full speed ahead to reach out to companies who benefit from using FreeBSD.

So far, we've only raised $254,713 towards our goal of raising $1,250,000 this year. Though we didn't hit our fundraising expectations last year, we decided to tap into our investments, to allow us to continue the same level of support for FreeBSD that we provided last year. We believe this is critical to keeping FreeBSD the reliable, secure, and innovative operating system that individuals and companies rely on. By continuing to make these investments, we hope companies will recognize the value of supporting FreeBSD through the Foundation with their financial contributions.

What do we do to support FreeBSD? Here is a list of key areas that we support:

Release Engineering: We employ a full-time release engineer, who has been leading this team for the last three years. Having someone focus on this full-time has led to releases that are stable, reliable, and timely.

OS improvements: We employ technical staff to maintain and improve the critical kernel subsystems, add features and functionality, and fix problems. This also includes funding larger projects like the arm64 port and toolchain work, to make sure FreeBSD remains a viable solution for new platforms and technologies.

FreeBSD Outreach and Advocacy: This includes sponsoring many BSD and non-BSD conferences; sending FreeBSD contributors to these conferences; improving the new user experience; supporting work on creating curriculum to be taught in schools and universities; publishing the high-quality FreeBSD focused magazine, The FreeBSD Journal; and providing more informational and training material.

Legal Support: We provide legal counsel to the core team when needed. We also engage in legal engagements like MoUs, NDAs, and license agreements on behalf of the Project.

Improving FreeBSD Infrastructure: We purchase and help maintain the hardware that hosts the FreeBSD website, software, tools, builds, and testing.

Face-to-Face Events: We facilitate collaboration among members of

the community, and build connections throughout the industry, to support a healthy and growing ecosystem. Examples are organizing and running vendor summits, sponsoring BSD events, and visiting commercial users.

We need your financial contributions to continue and increase our support for FreeBSD.

You can help by:

- Making a donation today.
- Inviting us to talk about FreeBSD at your company.
- Connect us with the appropriate people at your company to discuss a financial contribution.
- Help promote the work we are doing.

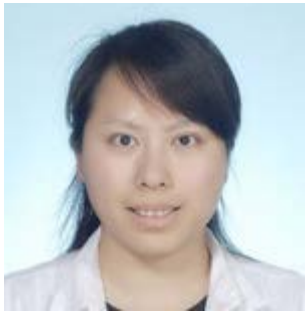
Feel free to contact me directly at deb (at) freebsdfoundation (dot) org to discuss how you can ask your company to make a donation, or to help us connect with your company.

Thank You!

-- contributed by Deb Goodkin

Meet Our New Board Members!

The FreeBSD Foundation is pleased to announce that Philip Paeps and Kylie Liang have joined the Board of Directors.



Kylie Liang is a senior program manager at Microsoft where she is leading FreeBSD related programs on public and private cloud, including FreeBSD Integration Service for Hyper-V development, FreeBSD based Virtual Appliance business engagement and promotion. Prior to Microsoft, Kylie started her career at Intel and led several software projects of kernel drivers and open source virtualization software. Kylie got her master's degree from ICT (Institute of Computing Technology) at Chinese Academy of Sciences. Kylie has dedicated herself to Open Source areas and has been promoting collaboration with Open Source communities for years. She will focus on FreeBSD evangelism in her region with local communities.

Find out more about Kylie and her reasons for joining the board in her New Board Member Interview.

Philip Paeps joined the FreeBSD Project as a src committer in 2004 beginning with work on ACPI. He has since moved on to other areas of the

kernel, as well as becoming a ports committer. He was the core team secretary from 2008 to 2012, and a member of the security team from 2007 to 2015.

As an independent consultant, Philip provides research and development on low-level software and operating systems, particularly in an embedded or real-time context. His main interests are bootloaders, device drivers and high-performance networking. In addition, Philip was one of the main organizers of FOSDEM, the largest annual open source software conference in Europe, from the early 2000s until 2015, and is currently involved with the organization of EuroBSDcon and various other conferences all over the world.

Take a few minutes to find out more about Philip and his plans as a Foundation board member in his New Board Member Interview.

Please join us in welcoming Kylie and Philip to the Foundation Board of Directors!

-- contributed by Anne Dickison

Update on FreeBSD Advocacy

If you've ever been to a FreeBSD Dev Summit, or read any of the Foundation entries in the quarterly status report, you've heard us talk about how advocating for FreeBSD is an important part of how we support the Project. Advocacy takes many forms, from attending conferences to promote the Project, to creating literature to educate and inform on the latest FreeBSD efforts. We talk about the latest developments on social media, interview community members about their experiences with FreeBSD, and work with companies to share why FreeBSD is their operating system of choice. This past month, we continued our advocacy efforts through the creation of new marketing materials and FreeBSD how-tos, and helping community members promote FreeBSD at events including:

- Creating a new TeachBSD postcard to spread the word about the program
- Creating a Google Summer of Code flyer to introduce the program to students at upcoming events.
- Posting two new FreeBSD How-Tos:
    - FreeBSD on Raspberry Pi How-To
    - Installing PC-BSD as an Operating System How-to
- Sharing a new Testimonial from IXC
- Updating our Brand Assets page to include more information about the FreeBSD Project and FreeBSD Foundation logos.

- Providing materials to Dan Langille for his table at Fosscon 2016

Please see the Brand Assets page to download approved versions of the Project and Foundation logos.

The full list of FreeBSD How-Tos is available here.

If you'd like to help with our advocacy efforts, PDFs of all our brochures and stickers are available online for you to print and distribute. If you don't see what you're looking for, please let us know so that we can assist you.

-- contributed by Anne Dickison

Update from Release Engineering

The FreeBSD Release Engineering Team continued the FreeBSD 11.0 release cycle, including investigation into several problem reports. At present, the release is delayed by two weeks, with 11.0-RC3 expected at the time of this writing. Otherwise, the 11.0-RELEASE cycle is going quite well.

Finished configuration of a FreeBSD/aarch64 (64-bit ARM) machine for the Ports Management Team to build native packages for publication on the official FreeBSD pkg(8) mirrors. For more information on the remaining milestones of the 11.0-RELEASE cycle, please visit https://www.freebsd.org/releases/11.0R/schedule.html.

-- contributed by Glen Barber