

FreeBSD Foundation November Update



The
FreeBSD
FOUNDATION

Dedicated to supporting the
FreeBSD Project and Community

Upcoming Events

[SCALE 14x](#)

January 21-24, 2016
Pasadena, CA

[FOSDEM 2016](#)

January 30-31, 2016
Brussels, Belgium

[FreeBSD Storage Summit](#)

February 22, 2016
Santa Clara, CA

[USENIX FAST '16](#)

February 22-25, 2016
Santa Clara, CA

FreeBSD Journal



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Message from the Executive Director

Dear FreeBSD Community Member,

November is the month I tend to reflect back on the year, and think about what I'm grateful for. There is so much to be grateful for, and near the top of my list is working with this amazing FreeBSD community. I've had the honor to work side-by-side with FreeBSD developers, users, and others who are passionate about making FreeBSD a great operating system. Over my 10 years of supporting the Project, I've seen it grow and flourish, and I'm grateful to be part of the Foundation team who works tirelessly with the community to make this happen.

Below you'll see more about what we've accomplished this past year and why we still need your help, but right now I just want to say **thank you** again for all you do for FreeBSD and the Foundation.

Deb

Development Projects Update

This month we'll take a look at Foundation staff member Edward Tomasz Napierała's "reroot" project. This project allows FreeBSD to boot with a temporary root file system, perform some set of actions, and then replace the temporary root file system with the real one. This is typically used to obtain access to the real root file system using userspace tools installed in the temporary file system. For example, the `iscsictl(8)` tool may be used to configure a remote iSCSI target, which will then be used as the root file system.



Foundation staff and board members often visit companies who use or build products on FreeBSD, as well as individual FreeBSD developers, system administrators, and users. We've heard from a number of them about use cases that require this functionality. A similar capability has long existed in other operating systems, and it became clear that we needed to enable this in FreeBSD as well.

From an end-user's perspective switching to a new root file system is

"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?



"Verisign provides critical Internet infrastructure for users world-wide. Not only does Verisign operate

two of the Internet's 13 root name servers, we also operate the name servers that resolve the .com and .net top level domains. If you use global Domain Name System (DNS) then you are probably relying on Verisign's infrastructure.

The Verisign .com and .net name servers answer 111 billion queries per second, and at times, much higher loads during high traffic events or due to high bandwidth Distributed Denial of Service (DDOS) attacks. These name servers are deployed at about 80 locations around the globe to ensure that no matter where you are, you can get DNS responses with low latency and high reliability.

One of the ways we ensure resilient DNS service is through the use of diverse operating systems. FreeBSD comprises a significant portion of the mix of operating systems that serve the root zone, and the .com and .net zones. Multiple operating systems are just one component of a layered design that incorporates redundancy and diversity across the system's architecture.

When we decided to change the mix of operating systems we conducted a thorough survey of the alternatives. After reviewing all of these operating systems, FreeBSD was selected for

as simple as setting the `vfs.root.mountfrom` kernel environment variable and then running `"reboot -r"`. The system kills all processes, unmounts all file systems, mounts the new root file system, and then continues with the usual startup sequence.

The kernel changes related to reroot support were committed in September, and the userspace changes (in `init(8)` and `reboot(8)`) arrived in early November. The support is available for testing in FreeBSD 11-CURRENT now, and a merge to the FreeBSD 10 development branch is being planned so that this feature can be made available in the FreeBSD 10.3 release.

-- contributed by Ed Maste and Edward Tomasz Napierała

Conference Recap: USENIX LISA '15



Last week Dru Lavigne, Glen Barber and I represented the Foundation at the USENIX LISA '15 conference, which took place, November 8-13, in Washington DC. LISA brings together IT operations professionals, site-reliability engineers, system administrators, and the like. It's an

excellent venue for meeting up with current and potential FreeBSD users. The Foundation had a booth in the Expo Hall and participated in a BoF. In addition to connecting with current community members, we spoke with attendees who were interested in getting involved with the Project, and helped set them on the correct path. We also took the opportunity to remind those who hadn't used FreeBSD in a while, what they were missing. One of my favorite moments took place when an attendee came by the booth to let us know that after speaking with us at last year's LISA, he started using FreeBSD. I'm looking forward to more of those conversations as our outreach at non-BSD Conferences continues.

During the FreeBSD BoF led by Garrett Wollman, Glen was able to address some pain points for current users and we were able to talk more about the Foundation and how it works with the Project.

As Deb has mentioned before, attending non-BSD conferences is an excellent way to promote the Project and the Foundation and LISA was no exception. Thank you to everyone who stopped by the table to say hello and make a donation. The support for FreeBSD within the LISA community is strong and we hope to have an even bigger presence next year.

-- contributed by Anne Dickison

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the .com and .net and root name servers based primarily on six considerations:

1. System Code Diversity: The BSD kernel and network stack is sufficiently diverse from the Linux kernel and network stack to provide mitigation against zero-day exploits. We reviewed the source code, as well as the development philosophy used by the FreeBSD developers.

2. Network Performance: FreeBSD provides performance for the name server workloads that are similar to Linux. It is encouraging to see the continued awareness and effort put into improving network performance on FreeBSD.

3. Hardware Support: Verisign regularly refreshes the hardware that comprises our name server footprint. FreeBSD is typically available for the commodity server hardware that Verisign chooses during a hardware refresh cycle. It is important to know that there will be reasonably short latency between the introduction of new server hardware and support for that hardware in FreeBSD.

4. Demonstrated History of Reliability: FreeBSD's reputation as a reliable server was a critical factor for us. The services hosted on FreeBSD have very high availability requirements, and along with FreeBSD's track record of rock solid operation directly addresses this criteria.

5. Demonstrated History of Secure Operation: The FreeBSD development community has a long track record of taking security seriously. When vulnerabilities are discovered, we typically see rapid



With the holiday shopping season right around the corner, we'd like to remind you that you can support the FreeBSD Foundation just by shopping with [AmazonSmile](https://smile.amazon.com).

Last quarter, the Foundation raised over \$400, and we'd like to thank everyone who has already supported us this way.

We hope you'll consider using AmazonSmile when shopping online this year and wish you all a very happy holiday season!

Fundraising Update: The Foundation Needs Your Support!

I can't believe we're more than halfway through November. The Thanksgiving holiday is next week in the US, and before you know it, December will here! That's when we'll be going full throttle with our year-end fundraising campaign! These past few months have been busy with conferences and summits that many of us attended. The feedback we received during the events has been very positive. More people are aware of FreeBSD, and are interested in trying it or getting involved. Universities are approaching us for curriculum, or advice on how to include FreeBSD in their curriculum. We're also learning about more companies and universities successfully using FreeBSD.



The above confirms the many opportunities the Foundation has to support the Project and community.

The last conference/summit I attended was the Santa Clara Developer/Vendor Summit. We're fortunate to have Foundation board member, George Neville-Neil volunteer to plan, organize, and run this event every year. We were proud to sponsor this event, and were grateful for sponsorships from NetApp, Juniper Networks, and TidalScale. The combined generosity allowed over 100 developers and company representatives to attend this two-day summit for free! This was a great opportunity for these attendees to share their project directions and goals, collaborate on projects of broad or mutual interest, and work together on projects that will continue after the summit.

I was given a short time-slot to talk about the Foundation, and explain who we are and what we do. My goal was to highlight all the work we've done,

disclosure and patches available almost immediately.

6. **Licensing:** The attention that the community pays to providing quality open source, without encumbering its use, is important to Verisign.

One of the many ways Verisign "gives back" to the community is through the biennial [vBSDcon conference](#). The conference is typically scheduled for a weekend in the October/November time frame; previous conferences were held in 2013 and 2015.

Since making the change to FreeBSD, we have been pleased to see it live up to our expectations. The FreeBSD development community should be proud to have critical Internet infrastructure served on FreeBSD; their hard work makes the Internet safer and more reliable. Verisign is proud to participate in the FreeBSD development community and to have employees who contribute work back to FreeBSD as well."

– Glen Wiley, Principal Engineer,
[Verisign, Inc.](#)

with the few resources we've had, and emphasize the need for funding to continue this work. Below is the list I presented:

Fund development projects, advocate for FreeBSD, support FreeBSD infrastructure, attend conferences to promote FreeBSD, facilitate collaboration between commercial users and the Project, publish the FreeBSD Journal, provide legal support, sponsor conferences, recruit to the Project, develop FreeBSD curriculum and classes, and provide release engineering support.

We support a lot! The opportunities are endless. The feedback is telling us that we are doing the right things. But, the financial support isn't there, and it's not scalable.

I don't know if people realize how small of an organization we are. We only have 6 staff members to do all the work that we'd like to do. The majority of that work is directly related to supporting FreeBSD. Our staff members are truly dedicated to the Project, and go above and beyond what is expected. But, we can't support everything we want with our limited resources. The opportunities are there to help grow and improve FreeBSD, but we can't do it with our current resources.

In a nutshell, we need more funding to continue our efforts!

Last year we raised around \$2.4 million dollars. This year our goal is \$1,250,000, and our spending will be around the same amount. Fortunately, last year we received some large donations, for which we are extremely grateful. Some of these funds were put into our long-term investments to help us in lean times. Unfortunately, that's what we have to use now. As I work on our 2016 budget, I'm already looking at where we will need to reduce spending, if we don't reach our goal. However, I still believe we will reach our goal this year. But, it's going to take a lot of work and we need your help.

You may wonder why we need \$1,250,000 to support FreeBSD? Please take a moment to see some of the areas we've funded this year with your donations:

- Funded and managed the port of FreeBSD to the new AArch64 64-bit ARM architecture, funded university research on Multipath TCP for FreeBSD, the reroot root file system remount project, and other projects.
- Provided full-time release engineering support, resulting with on-time and reliable releases.
- Employed three full-time development engineers who focus on code fixes and improvements, new features and functionality.
- Earmarked \$100,000 towards upgrading and improving FreeBSD infrastructure. This includes supporting the replication of our data and services such as subversion repo, web presence, mail, wiki, and others. We're upgrading our test infrastructure to handle more modern hardware and providing access to any project member who wishes.

- Sponsored many BSD conferences including: AsiaBSDCon, BSDCan, Ottawa Developer Summit, OSCON, vBSDCon, Santa Clara Vendor/Developer Summit, Cambridge FreeBSD Developer Summit, and EuroBSDCon.
- Sponsored 21 FreeBSD contributors to attend 8 conferences around the world to connect face-to-face with other FreeBSD people to work on projects, attend informative presentations to help further their involvement in FreeBSD, promote FreeBSD at non-BSD conferences, and share their work with others.
- Attended and sponsored non-BSD conferences, like the Grace Hopper Conference, womENCourage, OSCON, SNIA and USENIX LISA to promote FreeBSD, educate people on FreeBSD, and recruit new people to the Project.
- Funded education projects to teach and provide curriculum for FreeBSD classes from middle school to graduate level university classes.
- Funded and supported a professionally produced, high-quality, informative FreeBSD magazine, that has over 11,000 subscribers.
- Advocated for FreeBSD - this includes providing FreeBSD literature for all levels of FreeBSD users, to be handed out at conferences and events around the world.

We believe this support is greatly benefiting FreeBSD, and will help keep it the reliable, stable, and secure operating system that you can depend on for decades to come.

We are in a pivotal time for FreeBSD to really take off. More companies are successfully using FreeBSD, it is being supported on more platforms and products, and there's much more positive awareness about FreeBSD.

This is the time to help us invest in the future of FreeBSD.

Here is how you can help:

- You can make a donation today - Our goal is for 2000+ donors this year!
- Share this article with your upper-management and include how your company uses and benefits from FreeBSD. Email me if you need help - deb@freebsd.foundation.org
- Promote this on social media
- Don't forget to see if your company has an employer matching plan, to double your donation.

Click [here](#) to donate now! Thanks for your support!!

-- contributed by Deb Goodkin

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