svn**UPDATE**

by Steven Kreuzer

A code freeze for 10.3-RELEASE has been in effect for a while now. By the time you read this column, it should be available. In this installment of svn update I intended to tell you about some of the new features and enhancements; however, I became so excited about the recent updates happening in 11-CURRENT that I decided to change this at the last minute. As many of you have been eagerly awaiting the arrival of 10.3, you can find a list of changes since 10.2-RELEASE in the stable/10 release notes (https://www.freebsd.org/relnotes/10-STABLE/relnotes/article.html). If you would like to help out by participating in the release cycle, I strongly encourage you to try out the 10.3-BETA builds which are now available for download. Be sure to report any regressions you might stumble upon.

Support for the RISC-V Instruction Set Architecture (ISA)

While i386 and amd64 are the most popular, FreeBSD supports numerous architectures that allow you to install your favorite operating system on exotic hardware ranging from embedded ARM micro controllers to large SPARC workhorses. A recent update added support for a new and completely open ISA called RISC-V that is being made available to anyone under a BSD license. RISC-V was originally developed at the University of California, Berkeley, to support computer architecture research and education and is now set to become a standard open architecture for industry implementations. FreeBSD is the first operating system to have bootable in-tree support for RISC-V, and because FreeBSD can trace its heritage back to Berkeley as well, it only seems natural that it should support this new and exciting architecture. https://svnweb.freebsd.org/changeset/base/295041

Kernel Support for the Vector-Scalar eXtension (VSX) Found on the POWER7 and POWER8

The IBM POWER architecture provides vector and vector-scalar operations through the VMX and VSX instruction sets, which are part of the version 2.06 POWER ISA. Support for this instruction set has been added to the FreeBSD/powerpc port and unifies the 32 64-bit scalar floating point registers with the 32 128-bit vector registers into a single bank of 64 128-bit registers. https://svnweb.freebsd.org/changeset/base/279189

The Xen Netfront Driver Gains Multiqueue Support

With continued support from Citrix Systems R&D, Xen on FreeBSD is actively being worked on and a recent update will help address one of the major sources of performance degradation in virtualized environments. In addition to undergoing a major refactoring, the ability to have multiple TX and RX queue pairs has been added to the netfront driver. Guest virtual machines that have heavy network workloads should see a significant improvement since one of the biggest costs when virtualizing I/O is how to efficiently allow multiple virtual machines to securely share access to single devices. https://svnweb.freebsd.org/changeset/base/294442

OpenSSH Has Been Upgraded to 7.1p2.

The latest version of OpenSSH has been committed to the tree. This new version addresses the recent Use Roaming security issue that is documented in CVE-2016-0777 and CVE-2016-0778 and also fixes an out-of-bound read access in the packet-handling code. In addition, further use of explicit_bzero has been added in various buffer handling code paths to guard against compilers aggressively doing dead-store removal. https://svnweb.freebsd.org/changeset/base/294496

HPN Has Been Removed from OpenSSH

HPN is a set of patches from the Pittsburgh Supercomputing Center that remove several bottlenecks in OpenSSH to improve network performance, especially on long- and high-bandwidth network links. Unfortunately, they provided limited usefulness, and it required quite a bit of effort to

maintain these patches in the tree. As a result, they have been removed along with the None cipher. While most users will not be affected by this change, those who are should switch to the openssh-portable port which still offers both patches and has HPN enabled by default. https://svnweb.freebsd.org/changeset/base/294325

OpenSSL Has Been Updated to Version 1.0.2f.

A new release of OpenSSL has been imported into the tree that addresses CVE-2016-0701 in which the `DH_check_pub_key` function does not ensure that prime numbers are appropriate for Diffie-Hellman (DH) key exchange, which makes it easier for remote attackers to discover a private DH exponent by making multiple handshakes with a peer that chose an inappropriate number. In addition, this new version also addresses CVE-2015-3197 in which OpenSSL does not prevent use of disabled ciphers, which makes it easier for man-in-the-middle attackers to defeat cryptographic protection mechanisms by performing computations on SSLv2 traffic, related to the `get_client_master_key` and `get_client_hello` functions. https://svnweb.freebsd.org/changeset/base/295009

rc_conf_files Can Be Redefined in `rc.conf(5)`

This is one change I think will be welcomed with open arms by system administrators who need to maintain an infrastructure of hundreds or thousands of FreeBSD machines. Being able to create a rc.conf file specific for a machine's role and introduce that configuration into your environment without having to perform edits to `/etc/rc.conf` makes it easier to tell your junior admin to move this knowledge into a configuration management system and allows them to do so without having to learn the arcane syntax or templating required by such a system. While this change may appear to be minor, any steps that FreeBSD developers take to lower the barrier to entry and make the lives of the folks who are just getting started easier is a step in the right direction to making sure that FreeBSD will continue to see widespread adoption across all industries. https://svnweb.freebsd.org/changeset/base/295342

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