svn UPDATE

by Steven Kreuzer

The past few installments of svn update have all followed a theme, and I did my best to find recent commits to go along with the particular theme. Suffering from a case of writer's block, I decided to make this month's theme a hodgepodge of changes I find interesting, which, I guess, you could actually consider a theme. I hope you will enjoy this random selection of interesting commits as much as I have. Hopefully, when the new year rolls around, my brain will be in better shape. Here's looking forward to another incredible year of FreeBSD development!

Use estimated RTT for receive buffer auto resizing instead of timestamps. https://svnweb.freebsd.org/changeset/base/316676
Switched from using timestamps to RTT estimates when performing TCP receive buffer auto resizing, as not all hosts support / enable TCP timestamps. Disabled reset of receive buffer auto scaling when not in bulk receive mode, which gives an extra 20% performance increase.

The amazon-ssm-agent package is installed by default on EC2 AMI builds. https://svnweb.freebsd.org/changeset/base/325254
This makes it immediately available on instances that are running without Internet access (or that can't rely on firstboot_pkgs to install it for some other reason).

Support for compressed kernel dumps. https://svnweb.freebsd.org/changeset/base/324965
When using a kernel built with the GZIO config option, dumpon -z can be used to configure gzip compression using the in-kernel copy of zlib. This is useful on systems with large amounts of RAM, which require a correspondingly large dump device. Recovery of compressed dumps is also faster since fewer bytes need to be copied from the dump device.

Support for labeling md(4) devices. https://svnweb.freebsd.org/changeset/base/322969
This feature comes from the fact that we heavily rely on memory-backed md(4) in our build process. However, if the build goes haywire, the allocated resources (i.e., swap and memory-backed md(4)'s need to be purged. It is extremely useful to have the ability to attach arbitrary labels to each of the virtual disks so that they can be identified and GC'ed if necessary.

Support for Intel Software Guard Extensions (Intel SGX). https://svnweb.freebsd.org/changeset/base/322574
Intel SGX allows management of isolated compartments "Enclaves" in user VA space. Enclaves memory is part of processor reserved memory (PRM) and is always encrypted. This allows protection of user application code and data from upper privilege levels including the OS kernel.

The lengths of geli passwords are now hidden during boot. https://svnweb.freebsd.org/changeset/base/322923

CloudABI compatibility has been synced against version 0.13. https://svnweb.freebsd.org/changeset/base/322885
With Flower (CloudABI's network connection daemon) becoming more complete, there is no longer any need for creating any unconnected sockets. Socket pairs in combination with file descriptor passing is all that is necessary, as that is what is used by Flower to pass network connections from the public Internet to listening processes.

svn **UPDATE** continued

Support for ZFS Channel Programs have been imported from OpenZFS. https://svnweb.freebsd.org/changeset/base/324163
ZFS channel programs (ZCP) add support for performing compound ZFS administrative actions via Lua scripts in a sandboxed environment (with time and memory limits). The initial commit includes both base support for running ZCP scripts, and a small initial library of API calls that support getting properties and listing, destroying, and promoting datasets.

Support for suspending and resuming a zpool scrub. https://svnweb.freebsd.org/changeset/base/323355
Scrubbing can be an I/O intensive operation and people have been asking for the ability to pause a scrub for a while. This allows one to preserve scrub progress while freeing up bandwidth for other I/O.

Support setting the colors of cursors for the VGA renderer. https://svnweb.freebsd.org/changeset/base/322878

Add a new tool for doing experiments with SDIO cards. https://svnweb.freebsd.org/changeset/base/320847

Add mmcnull, an emulated lightweight MMC controller. https://svnweb.freebsd.org/changeset/base/320845
This emulated device attaches to the ISA bus and registers itself as HBA supporting MMC/SD cards. This allows the development and testing of MMC XPT and MMC / SDIO peripheral drivers even in the VM such as bhyve.

STEVEN KREUZER is a FreeBSD Developer and Unix Systems Administrator with an interest in retro-computing and air-cooled Volkswagens. He lives in Queens, New York, with his wife, daughter, and dog.