

svn UPDATE

by Steven Kreuzer

The goal of having a reproducible build system is fairly simple: when you compile some source code, the binary that is produced should be exactly identical to any binary compiled in the past or the future. One of the biggest advantages of reproducible builds is that you can be confident any code you run in production is exactly what you expect it to be. But it also offers numerous other benefits, such as allowing for much greater cache sharing that results in quicker build times and even solves complex issues of developers having to maintain cryptographic keys to sign code or trust the machine on which a binary was built. Developers started work to add support for creating reproducible builds back in 2013, and in the past couple months, we've seen several commits that bring this work even closer to completion. For this column, I've decided to highlight several changes, both big and small, as a way to showcase the work that goes into such a complex development project. While these types of projects tend to be invisible to the end user, it's these types of tasks that help build such a robust and verifiable system.

Add WITH_REPRODUCIBLE_BUILD src.conf(5) knob to disable kernel metadata.
<https://svnweb.freebsd.org/changeset/base/310128>

Build loaders reproducibly when WITH_REPRODUCIBLE_BUILD.
<https://svnweb.freebsd.org/changeset/base/310268>

Remove '-vd' option to make iasl(8) reproducible.
<https://svnweb.freebsd.org/changeset/base/311529>

Replace non-reproducible __DATE__/__TIME__ with hardcoded string in vchi driver.
<https://svnweb.freebsd.org/changeset/base/310560>

Avoid use of __DATE__ to make build reproducible in mlx driver.
<https://svnweb.freebsd.org/changeset/base/310425>

Remove srand() to ensure deterministic output in bhnd(4).
<https://svnweb.freebsd.org/changeset/base/310371>

Add -R option to include metadata only for unmodified src tree in newvers.sh.
<https://svnweb.freebsd.org/changeset/base/310273>

Add option to eliminate kernel build metadata in newvers.sh.
<https://svnweb.freebsd.org/changeset/base/310112>

Make output reproducible in makewhatis.
<https://svnweb.freebsd.org/changeset/base/307003>

Use changelog date rather than file modification date in man pages.
<https://svnweb.freebsd.org/changeset/base/306740>

Set EFI boot loader PE/COFF timestamps to known value for reproducible builds.
<https://svnweb.freebsd.org/changeset/base/305160>

However, reproducible builds are not the only exciting change to hit the src tree this month. Version 3.9.1 of LLVM was also imported, and the entire FreeBSD userland world + kernel successfully linked with LLVM's LLD (with one FreeBSD patch to be committed for an 18-year-old bug).

Upgrade our copies of clang, llvm, lld, lldb, compiler-rt and libc++ to 3.9.1 release.
<https://svnweb.freebsd.org/changeset/base/310194>

btxldr: process all PT_LOAD segments, not just the first two.
<https://svnweb.freebsd.org/changeset/base/310702>

Finally, Amazon announced that they have rolled out IPv6 support in EC2 to 15 regions, and now future FreeBSD releases will support IPv6 by default on EC2. Support for IPv6 is possible on existing EC2 instances, but it will require you to run a few simple commands.

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