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svn UPDATE

by Steven Kreuzer

We have entered the 12.0 release cycle! The code freeze has begun and the 12.0-RELEASE announcement is scheduled for November 13. It's likely that by the time you read this column, the releng/12.0 branch will have been created.

One thing I am thrilled to see is that more of the userland tools are gaining libxo support. What I have always loved about the Unix command line is the ability to pipe output from one command to another to perform some manipulation before sending it off to another command for some final processing. My biggest pet peeve is that all this output doesn't follow any real "standard" and most of the time you find yourself having to parse blocks of text, looking for a certain string, counting a few lines down from there and performing other acts of pure insanity. libxo solves this by making it easy to generate text, XML, JSON, and HTML output using a common set of function calls. It is a welcome addition to the tree.

pf: Support "return" statements in passing rules when they fail—

https://svnweb.freebsd.org/changeset/base/335569

Normally pf rules are expected to do one of two things: pass the traffic or block it. Blocking can be silent - "drop", or loud - "return", "return-rst", "return-icmp". Yet there is a third category of traffic passing through pf: packets matching a "pass" rule but, when applying the rule, fail. This happens when a redirection table is empty or when src node or state creation fails. Such rules always fail silently without notifying the sender. Allow users to configure this behavior too so that pf returns an error packet in these cases.

Introduce arm64 linuxulator stubs—

https://svnweb.freebsd.org/changeset/base/335333

This provides stub implementations of arm64 Linux vdso and machdep, ptrace, and futex sufficient for executing an arm64 Linux 'hello world' binary.

Make UMA and malloc(9) return non-executable memory in most cases—

https://svnweb.freebsd.org/changeset/base/335068

Most kernel memory that is allocated after boot does not need to be executable. There are a few exceptions. For example, kernel modules do need executable memory, but they don't use UMA or malloc(9). The BPF JIT compiler also needs executable memory and did use malloc(9) until r317072. This change makes malloc(9) return non-executable memory unless the new M_EXEC flag is specified. After this change, the UMA zone(9) allocator will always return non-executable memory and a KASSERT will catch attempts to use the M_EXEC flag to allocate executable memory using uma_zalloc() or its variants.

Flip the default interpreter to Lua—

https://svnweb.freebsd.org/changeset/base/338050

After years in the making, lualoader is ready to make its debut. Both flavors of loader are still built by default, and may be installed as /boot/loader or /boot/loader.efi as appropriate either, by manually creating hard links or using LOADER_DEFAULT_INTERP as documented in build(7).

Add libxo(3) support to lastlogin(8)—

https://svnweb.freebsd.org/changeset/base/338353

Add libxo(3) support to last(1)—

https://svnweb.freebsd.org/changeset/base/338352

Speed up vt(4) by keeping a record of the most recently drawn character and the foreground and background colors—

https://svnweb.freebsd.org/changeset/base/338316

In bitblt_text functions, compare values to this cache and don't redraw the characters if they haven't changed. When invalidating the display, clear this cache in order to force characters to be redrawn; also force full redraws between suspend/resume pairs since odd artifacts can otherwise result. When scrolling the display (which is where most time is spent within the vt driver) this yields a significant performance improvement if most lines are less than the width of the terminal, since this avoids redrawing blanks on top of blanks. On a c5.4xlarge EC2 instance (with emulated text mode VGA), this cuts the time spent in vt(4) during the kernel boot from 1200 ms to 700 ms; on my laptop (with a 3200x1800 display) the corresponding time is reduced from 970 ms down to 155 ms.

Make it possible for init to execute any executable, not just sh(1) scripts—
https://svnweb.freebsd.org/changeset/base/337321

This means one should be able to eg rewrite their /etc/rcin Python.

Add the ability to run bhyve(8) within a jail(8)—
https://svnweb.freebsd.org/changeset/base/337023

This patch adds a new sysctl(8) knob "security.jail.vmm_allowed"; by default this option is disable.

Extend loader(8) geli support to all architectures and all disk-like devices—
https://svnweb.freebsd.org/changeset/base/336252

This moves the bulk of the geli support from lib386/biosdisk.c into a new geli/gelidev.c which implements a devsw-type device whose dv_strategy() function handles geli decryption. Support for all arches comes from moving the taste-and-attach code to the devopen() function in libsa. After opening any DEVT_DISK device, devopen() calls the new function geli_probe_and_attach(), which will "attach" the geli code to the open_file struct by creating a geli_devdesc instance to replace the disk_devdesc instance in the open_file. That routes all IO for the device through the geli code. A new public geli_add_key() function is added to allow arch/vendor-specific code to add keys obtained from custom hardware or other sources. With these changes, geli support will be compiled into all variations of loader(8) on all arches because the default is WITH_LOADER_GELI.

Add bhyve NVMe device emulation—
https://svnweb.freebsd.org/changeset/base/335974

The initial work on bhyve NVMe device emulation was done by the GSoC student Shunsuke Mie and was heavily modified in performance, functionality and guest support by Leon Dang.

Enable options NUMA in GENERIC and MINIMAL—
https://svnweb.freebsd.org/changeset/base/338602

Switch the default pager for most commands to less—
https://svnweb.freebsd.org/changeset/base/337497

Sometimes less is more, and now it is consistent across base.

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