Dracut

A Generic Initramfs Infrastructure

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Dracut

- Tools used on the system
- Event based with udev
- Generic across distributions
- Generic across hardware
- Nothing hardcoded
Targets

- Boot any system configuration on any hardware with the same initramfs image
- Easy to extend and customize
Modules

- I18n
- Network
- Plymouth
- Crypt, DMraid, LVM, MDraid, btrfs
- dmsquash-live
- FCoE, iSCSI, NBD, NFS
- resume

- S390
- bootchart
- Fips, caps, selinux
- busybox
- gensplash, plymouth
- xen
- multipath
- crypt-gpg
Synopsis

# dracut [OPTION]... <image> <kernel-version>
Basic setup
  Hooks: cmdline, pre-udev

Start Udev
  Hooks: pre-trigger

Trigger Udev
  Initqueue

Wait for jobs or udev settled
  Initqueue settled
  Initqueue finished

Found root device
  Hooks: pre-mount
  Hooks: mount
  Hooks: pre-pivot

Cleanup and switch_root
Future Plans
Split Initramfs Images

Problems:

• long time to build initramfs in rpm %post
• no new image created for new fixes in tools
• no new image created, if configuration changes
Images

Kernel

- generic /var/lib/initramfs/initramfs-kernel-$version.img
  - built at kernel compilation
  - built on dracut update

- Host-only /var/lib/initramfs/initramfs-kernel-host-$version.img
  - built after booting the generic image or at kernel installation
  - built on dracut update
Images

Configuration /var/lib/initramfs-conf-$date.img
- triggered by changed configuration
- built on dracut update
Initramfs Generation

- keep track of installed files
- add shasum/timestamp/version file in image for error.log
Boot Failure

- no root found / kernel failure
- grub2 can set next default image

START:
- set default boot entry to next fallback
- boot image
- boot successful?
  - yes -> real root has to reset default boot entry
  - no -> goto START
Result

kernel-new-default
-> kernel-last-booted
  -> kernel-last-booted-generic

dracut part:
  • create error.log in /boot
  • reboot
Boot Check

• set grub default entry to booted image
• Is booted image the last generated?
  • Yes
    – is image host-only?
      • Yes
        – Nop
      • No
        – generate host-only image and add boot entry
        – set host-only image default
        – fallback to generic one
  • No
    – error handling
Future Plans
Disk Assembly

- Move away from shell script and udev hackery
- Clean implementation, linked against libudev
- Common configuration files
- STC of David Zeuthen a start
Future Plans
Systemd

- Systemd in initramfs
- Initramfs is the new rootfs
- Move everything to /usr
- /usr <-> /etc
- No switch_root / pivot_root required
Participate

irc://irc.freenode.net/dracut

git://git.kernel.org/pub/scm/boot/dracut/dracut.git

http://dracut.wiki.kernel.org

Initramfs Mailing List on kernel.org
Thanks for Listening!

Questions?