UDisks2

The new generation of UDisks2

Vratislav Podzimek

Red Hat Czech / Filesystems And Storage

<vpodzimeATredhat.com>

What UDisks Is

- "the thing that lets you mount a USB flash drive without root permissions"
- "the thing that lets you unlock your encrypted drive without root permissions"
- a daemon providing a DBus API for monitoring and management of storage devices
- running as root, using PolicyKit for authorization
- *udisksctl* CLI
- backend of GNOME Disks (Palimpsest)

A Brief History Of UDisks

Ancient Times and Middle Ages

- original author: David Zeuthen (Red Hat)
- original name: DeviceKit-disks
- first commit: March 5 2008
- renamed to UDisks: December 1 2009

- bumped to UDisks2: February 16 2011
- development until 2012/2013
- maintenance until 2014
- handed over to Martin Pitt (Debian/Ubuntu): 2014

Modern Times

- conflict of interests: October 2014
  - Red Hat wanted "enterprise features" (e.g. LVM, for Cockpit)
  - David Zeuthen insisted on the idea of a "desktop/laptop storage daemon"

> *"As I said a couple of months ago when we discussed this via email, I think this is a bad idea. Please move this to its own daemon/project or something; I don't want it in udisks." (bugs.freedesktop.org)*

- UDisks2 forked by Tomáš Bžatek (Red Hat)
  - the idea of an "enterprise-ready modular daemon"
  - implemented support for plugins/modules
  - first module: LVM2 (ports from Cockpit's *storaged*)

Post-Modern Times

- parallel development (forked) and maintenance (origin)
- March 6 2015: forked UDisks2 renamed to storaged (Peter Hatina, Red Hat)
  - new API org.storaged.Storaged
  - version reset to 2.0.0
- a number of new modules added: iSCSI, zram, btrfs, bcache, LSM
- January 28 2016: storaged as a drop-in replacement for UDisks2 (Fedora 25 Change)
  - back to the original API org.freedesktop.UDisks2
- October 2016: storaged handed over to our team
- February 15 2017:

```
Merge pull request #191 from martinpitt/the-grand-reunion

Rename storaged back to udisks
```

  - Martin Pitt hired by Red Hat in the meantime

What we have been working on

- wrote many, many DBus tests (150+)
- transformed UDisks2 into a modern OSS project
  - **TESTS**
  - everything hosted on GitHub, doing pull requests, issues,...
  - Continuous Integration (Jenkins), Continuous Delivery (daily Copr builds)
  - versioned documentation
  - release early, release often (monthly)
  - fast and open responds at GitHub
- participating in GSoC - Kai Lüke, GParted feature parity
- ported UDisks2 to libblockdev

```
Merge pull request #260 from storaged-project/master-libblockdev

Merge master-libblockdev to master

76 files changed, 4940 insertions(+), 4851 deletions(-)
[Total files:   928]
[Total loc:   86694]
```

libblockdev

- *"...is a library for doing operations with block devices"*
- written in C, providing C and GObject Introspection API
- plugin based
- supports many technologies: partitions, LVM, MD RAID, LUKS, Btrfs, bcache, loop, file systems, swap, s390,...
- "stateless", straightforward, providing simple high-level API
- using libraries/DBus (where possible) or (mostly) parsing CLI output
- benefits for UDisks2:
  - **used by Blivet and the Anaconda OS installer**
  - separating the daemon and DBus logic from the actual operations
  - heavily tested (293 tests ran on every change and every day)
  - simplicity

What we have been working on - cont.

Some numbers

Total commits: 2504
Total files: 928
Total loc: 86694

Author	loc	coms	fils	distribution
David Zeuthen	32588	1226	94	37.6/49.0/10.1
Peter Hatina	27525	231	284	31.7/ 9.2/30.6
Vojtech Trefny	7906	240	95	9.1/ 9.6/10.2
Vratislav Podzimek	3685	274	97	4.3/10.9/10.5
Gris Ge	2781	6	25	3.2/ 0.2/ 2.7
Tomas Bzatek	2692	43	30	3.1/ 1.7/ 3.2
Martin Pitt	2175	208	74	2.5/ 8.3/ 8.0
Tony Asleson	1460	62	30	1.7/ 2.5/ 3.2
Marius Vollmer	1306	33	23	1.5/ 1.3/ 2.5
Kai Lüke	1087	7	8	1.3/ 0.3/ 0.9

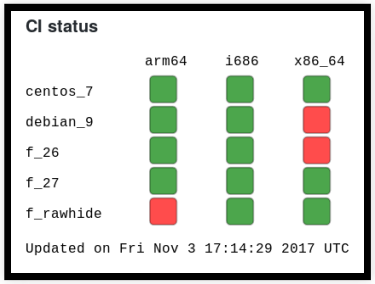
Reach outside of the Red Hat world

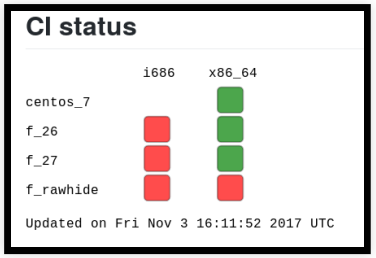
- making new UDisks2 attractive
  - active development and frequent releases
  - being open to and greatful for third-party contributions
  - bug fixing (even old bugs from bugs.freedesktop.org)
  - making CI results publicly visible
- new features:
  - file system and partition resize (Kai Lüke)
  - file system check/repair (Kai Lüke)
  - *GetBlockDevices()*, *ResolveDevice()* methods and *Partitions* property (Vojtěch Trefný)
  - generic *DeviceOpen()* method (Vojtěch Trefný)
  - *Swapspace.SetLabel()* method (Vojtěch Trefný)

Continuous Integration

- Jenkins with 47 slaves (managed by ansible)
- running tests on pull requests

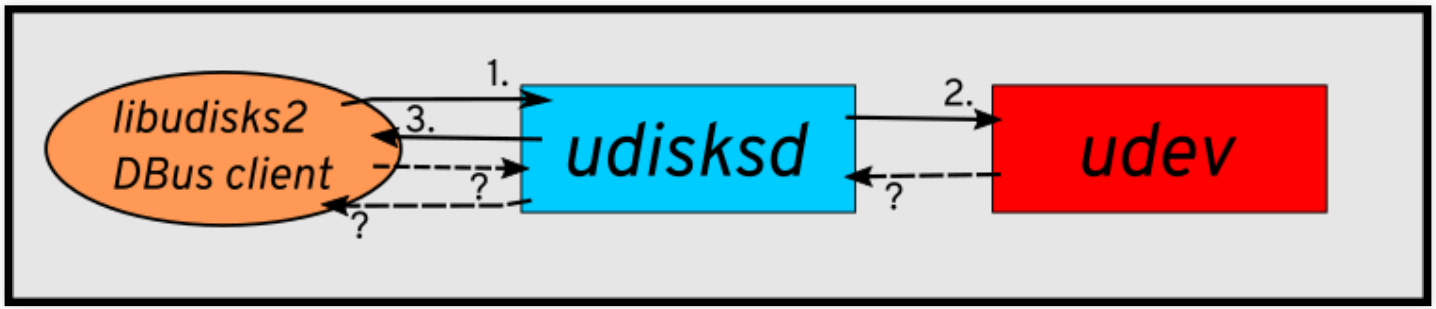
- running tests on the master branch





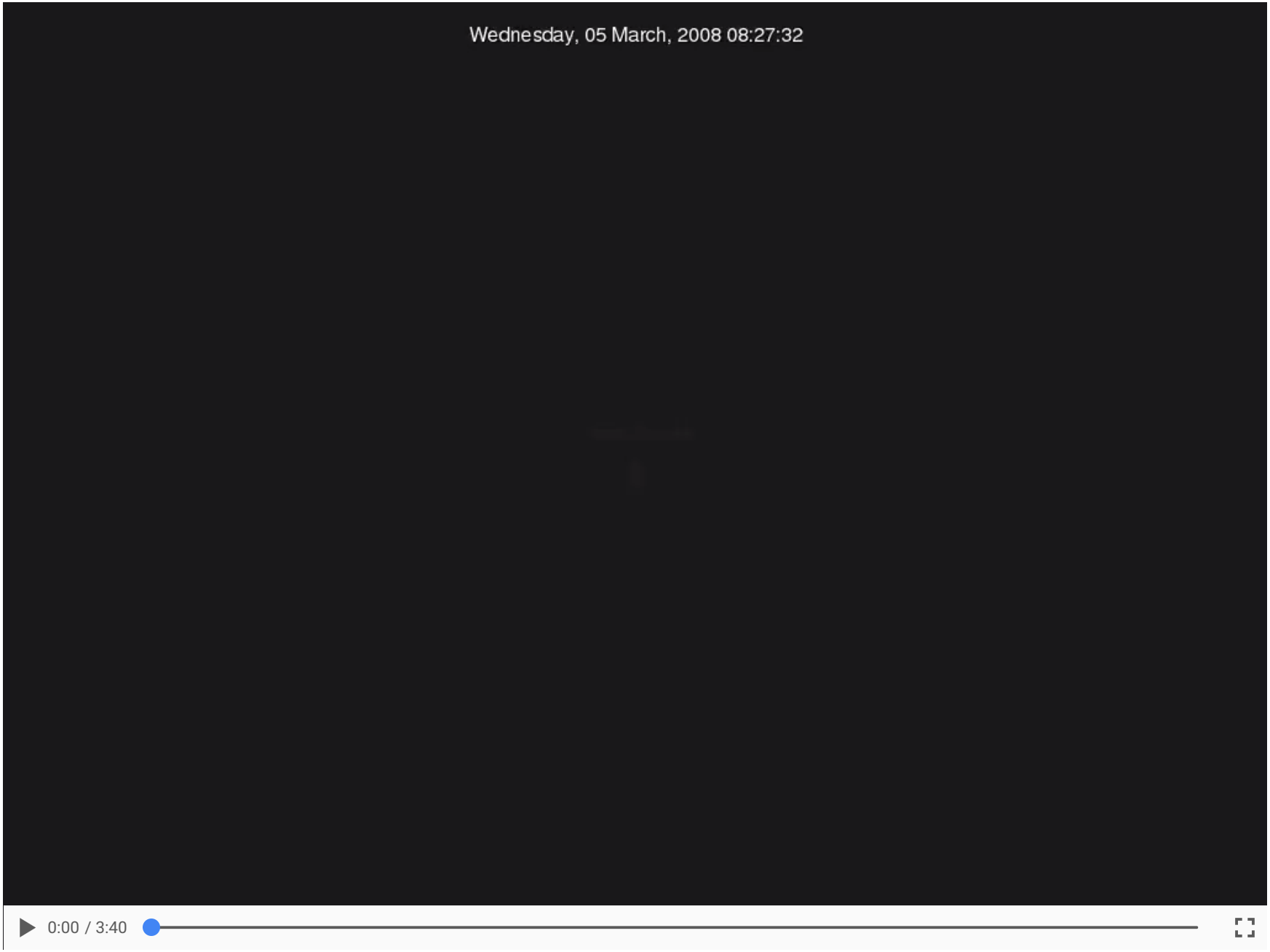
Endless Fighting

- UDisks2 design



- storage APIs (libraries)
- stability of distributions
- actually testing storage (*as the only ones?!*)
  - kernel panics
  - regressions in CLI/libraries
  - deadlocks in CLI/libraries
  - libraries that call abort(), wait(),...

Popcorn Time!



Thanks for your attention!

- And big THANKS to all contributors to the UDisks project! In particular:
  - David Zeuthen
  - Martin Pitt
  - Tomáš Bžatek
  - Marius Vollmer
  - Peter Hatina
  - Tomáš Smetana
  - Vojtěch Trefný
  - Kai Lüke