GNU Guix behind the scene

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What’s GNU Guix?

- Package manager written in Guile scheme.
- Advanced distribution proposing declarative system configuration for transparent and reproducible operating systems.
Update Guix

guix pull --no-substitutes
[...]
New in this revision:
  133 new packages: alembic, aws-vault, ...
  252 packages upgraded: arm-trusted-firmware-rk3328@2.6, ...

News for channel 'guix'
New '--tune' option for CPU micro-architecture tuning
'integer expected from stream'? Update your Guix daemon

hint: Run 'guix pull --news' to read all the news.

real 43m1.738s
user 2m9.620s
sys 0m1.658s
What are substitutes?

- Archives containing the output of a derivation.

$ guix build hello -d
/gnu/store/260bk0ch4-hello-2.10.drv

$ curl https://ci.guix.gnu.org/260bk0ch4.narinfo
StorePath: /gnu/store/260bk0ch4np4-hello-2.10.drv
URL: nar/gzip/260bk0ch4np4-hello-2.10.drv
Compression: lzip
FileSize: 1180
URL: nar/zstd/260bk0ch4np4-hello-2.10.drv
Compression: zstd
FileSize: 1122
NarHash: sha256:12sbrgk0ypqmy
NarSize: 2408
References: 1zcr255w81a-linux-libre-headers-5.10.35.drv ...
Signature: 1;berlin.guix.gnu.org;KHNpZ2 ...
Enter Cuirass

- Nix Hydra rewrite.
- Poll sources from multiple Git repositories.
- Execute builds on local or remote Guix daemons.
- Store build products or artifacts.
- Collect build logs and metrics.
- Provides a REST API and a web interface.
Berlin build farm

▶ One head node: 96 CPUs, 188GiB of RAM, 37TB storage.
▶ 30 Intel workers.
▶ 6 ARM workers and 1 PowerPC via VPN.
Maintaing Cuirass

- Fibers is not mature.
- Sqlite did not scale.
- Daemon offloading was also problematic.
Improving Cuirass

- 6 months of work sponsored by NLNET.
- Switch to PostgreSQL database.
- Better user interface.
- Offloading with ZMQ.
- Watchdog, timeouts, metrics and logging support.
New architecture
Extended CI use

- Build WIP branches.
- Run system tests.
- Build & deploy images.
- Check if sources are available.
- Build the disarchive database.
- Pull if substitutes.
Development guidelines

- Write robust queries, optimize the existing.
- Add unit tests covering each and everyone of them.
- Maximal code reuse: publish, substitutes download.
- Track exceptions.
- Verbose logging.
- Minimize maintenance.
Software issues

- Publish server timeouts and crashes.
- Guile ARM GC lock up.
- Cope with lack of space and RAM on the workers.
- Improve reporting.
Hardware issues

- HDD storage + big store = GC issues.
- Missing ARM and PowerPC hardware.
Future features

- Build patchsets.
- Show branches diff.
Contribute

- Join the Guix sysadmin team.
- Donate machines or money.
- Report issues.