Hyperscale SIG update

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Davide Cavalca
CentOS Dojo Summer 2022
Agenda

- SIG recap
- Deliverables and recent work
- Coming up
Hyperscale SIG

- CentOS Stream focus
- Large-scale infrastructure
- Foster cross-company collaboration on packages and tooling
- Bring in-house development out in the open
- Open to anybody interested in working in this space
Documentation

● Charter: https://wiki.centos.org/SpecialInterestGroup/Hyperscale

● Activity reports:
  ○ 2022Q1: https://blog.centos.org/2022/04/centos-hyperscale-sig-quarterly-report-for-2022q1/
  ○ 2021Q4: https://blog.centos.org/2022/01/centos-hyperscale-sig-quarterly-report-for-2021q4/
  ○ 2021Q2: https://blog.centos.org/2021/06/centos-hyperscale-sig-quarterly-report-for-2021q2/

● User documentation: https://sigs.centos.org/hyperscale
SIG health

- Established in Jan 2021 with 6 founding members
- 22 members as of Jun 2022, steadily growing
- #centos-hyperscale on Libera.Chat
- #centos-hyperscale:fedoraproject.org on Matrix
- Bi-weekly IRC meetings: https://sigs.centos.org/hyperscale/internal/meetings
- Monthly hackathons / video hangouts
- Issue tracker: https://pagure.io/centos-sig-hyperscale/sig
- Conference talks: https://sigs.centos.org/hyperscale/internal/talks
Hyperscale SIG scope

- Faster moving package backports
- Policy and configuration alternatives
- Large-scale testing enablement
- Kernel
- Live DVD ISOs
Package backports

- Delivered to the Hyperscale main repository
  - dnf install centos-release-hyperscale
- Drop in replacements for stock CentOS packages
- File bugs on https://pagure.io/centos-sig-hyperscale/package-bugs
- Built against (and requiring) EPEL
- Targeting x86_64 and aarch64
Package updates

- Automated tracking for packages that need to be updated
- Files issues whenever a new upstream build supersedes a SIG package
- Leverages MQTT notifications
- Running in the OpenShift CI
- [https://pagure.io/centos-sig-hyperscale/package-updates](https://pagure.io/centos-sig-hyperscale/package-updates)
- In the future: automated rebuilds?
systemd

- SIG branch tracking the latest upstream (currently 250, soon 251)
- Builds for CentOS Stream 8 and 9 available
- Defaults to unified hierarchy (cgroup2)
- systemd-oomd (needs PSI)
- systemd-networkd, systemd-resolved
- systemd-journald improvements (including CoW optimizations)
- Experimental SELinux enablement
systemd

- Public repo to track development and stage patches
  - [https://pagure.io/centos-sig-hyperscale/systemd](https://pagure.io/centos-sig-hyperscale/systemd)

- Public repo for releng tools and scripts
  - [https://pagure.io/centos-sig-hyperscale/systemd-releng](https://pagure.io/centos-sig-hyperscale/systemd-releng)

- Contribution guide
  - [https://sigs.centos.org/hyperscale/internal/systemd/](https://sigs.centos.org/hyperscale/internal/systemd/)

- Contbuild on CentOS CI
  - Based on the current Hyperscale packaging
  - New Python implementation
  - Daily rebuilds of the upstream git master for CentOS Stream 8 and CentOS Stream 9
  - In the future: End-to-end VM-based testing
CentOS Stream 9

- Available and ready for use: [https://blog.centos.org/2021/12/introducing-centos-stream-9/](https://blog.centos.org/2021/12/introducing-centos-stream-9/)
- Hyperscale is targeting CentOS Stream 8 and 9 concurrently
- Upstream feature contributions
  - systemd-oomd package and default configuration
  - Packaging macros for third-party nginx modules
  - PipeWire with WirePlumber and JACK compatibility
  - Wayland support for the GNOME Classic session
  - SDL2 support for GNOME Wayland
  - libva and wayland updates
  - ethtool 5.16 rebase
Large-scale testing

- Provide a way to test distro-wide changes in production settings
- DNF/RPM Copy-on-Write
  - [https://fedoraproject.org/wiki/Changes/RPMCoW](https://fedoraproject.org/wiki/Changes/RPMCoW)
  - Requires patched packaging stack
  - Currently deployed in production at FB
- Released to a dedicated “experimental” repo
  - `dnf install centos-release-hyperscale-experimental`
- Latest update: [https://hackmd.io/@chantra/BJ1Hedw0F](https://hackmd.io/@chantra/BJ1Hedw0F)
Kernel

- 5.14 kernel based on the CentOS Stream 9 kernel
- Development tree: https://pagure.io/centos-sig-hyperscale/linux
- Build for CentOS Stream 8 and CentOS Stream 9
- Btrfs support
- Secure boot is still outstanding: https://pagure.io/centos-infra/issue/307
- Available in the experimental repo
Kernel collaboration work

- **CentOS Stream 9 kernel contributions**
  - zstd sync with 5.16 and configuration enablement
  - CONFIG_CRYPTO_BLAKE2B
  - Build fixes
- **Contribution guide:** [https://sigs.centos.org/hyperscale/internal/kernel/](https://sigs.centos.org/hyperscale/internal/kernel/)
- **kmod-btrfs for CentOS Stream 9**
  - Targeting the stock CentOS Stream 9 / RHEL 9 kernel
  - Published by the CentOS Kmods SIG
Kernel userspace

- **Btrfs**
  - btrfs-progs backported from Fedora, currently at 5.16.2
  - compsize 1.5
  - Restored btrfs support in the storage stack and installer
    - Anaconda installer development tree: [https://pagure.io/centos-sig-hyperscale/anaconda](https://pagure.io/centos-sig-hyperscale/anaconda)
    - Released to dedicated “spin” repo for media
    - Used for Hyperscale spin media

- **ethtool 5.16**
  - Hyperscale backport for CentOS Stream 8
  - Rebased in CentOS Stream 9

- **kpatch 0.9.6**
  - Includes kpatch-build
  - Backported clang PGO support and other fixes
**Container image**

- Minimal container image based on Hyperscale repos and packages
- Build from scratch: [https://pagure.io/centos-sig-hyperscale/containers-releng](https://pagure.io/centos-sig-hyperscale/containers-releng)
- [https://quay.io/centoshyperscale/centos](https://quay.io/centoshyperscale/centos)
- CentOS Stream 8
  
  ```
  podman run -a stdin,stdout,stderr -t quay.io/centoshyperscale/centos:stream8
  ```

- CentOS Stream 9
  
  ```
  podman run -a stdin,stdout,stderr -t quay.io/centoshyperscale/centos:stream9
  ```
Live media spin

- Two CentOS Stream 8 spins: GNOME and KDE Plasma
- Live DVD ISO images with Hyperscale repos and packages
- Leveraging our kernel with btrfs support out of the box
- Download: [https://sigs.centos.org/hyperscale/spins/workstation/](https://sigs.centos.org/hyperscale/spins/workstation/)
- CentOS Stream 9 spins coming soon
Coming up

● CBS-based live media image builds
● Updated QEMU package in EPEL
● Btrfs transactional updates
● Continuous-build pipeline for the container image
● Hyperscale-enabled cloud images
● Dedicated repo for Intel-optimized packages
Resources

- [https://wiki.centos.org/SpecialInterestGroup/Hyperscale](https://wiki.centos.org/SpecialInterestGroup/Hyperscale)
- [https://sigs.centos.org/hyperscale](https://sigs.centos.org/hyperscale)
- [#centos-hyperscale on Libera.Chat](https://sigs.centos.org/hyperscale)
- [#centos-hyperscale:fedoraproject.org on Matrix](https://pagure.io/centos-sig-hyperscale/sig)
- [Bi-weekly meetings and monthly VC hangout](https://www.centos.org/community/calendar)
- [https://pagure.io/centos-sig-hyperscale/sig issue tracker](https://pagure.io/centos-sig-hyperscale/sig)
- centos-devel mailing list
Questions?