

# Hyperscale SIG update

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# 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:
  - 2022Q2: <https://blog.centos.org/2022/07/centos-hyperscale-sig-quarterly-report-for-2022q2/>
  - 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/>
  - 2021Q3: <https://blog.centos.org/2021/10/centos-hyperscale-sig-quarterly-report-for-2021q3/>
  - 2021Q2: <https://blog.centos.org/2021/06/centos-hyperscale-sig-quarterly-report-for-2021q2/>
  - 2021Q1: <https://blog.centos.org/2021/04/centos-hyperscale-sig-quarterly-report/>
- User documentation: <https://sigs.centos.org/hyperscale>

# SIG health

- Established in Jan 2021 with 6 founding members
- 23 members as of Aug 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>
- 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
- <https://github.com/systemd/systemd/blob/main/NEWS>

# systemd

- Public repo to track development and stage patches
  - <https://pagure.io/centos-sig-hyperscale/systemd>
- Public repo for releng tools and scripts
  - <https://pagure.io/centos-sig-hyperscale/systemd-releng>
- Contribution guide
  - <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/>
- 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>
  - 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>

# 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\_CRYPTOLIB\_BLAKE2B
  - Build fixes
- Contribution guide: <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>
    - 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-releeng>
- <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/>
- Report issues: <https://pagure.io/centos-sig-hyperscale/spin-bugs>
- 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://sigs.centos.org/hyperscale>
- #centos-hyperscale on Libera.Chat
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- Bi-weekly meetings and monthly VC hangout
  - <https://www.centos.org/community/calendar>
- <https://pagure.io/centos-sig-hyperscale/sig> issue tracker
- centos-devel mailing list

Questions?