Hyperscale SIG update

February 2022

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CentOS Dojo FOSDEM 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:
  - 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
- 19 members as of Feb 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
- Built against (and requiring) EPEL
- Targeting x86_64 and aarch64
systemd

- SIG branch tracking the latest upstream (currently 249, soon 250)
- Builds for CentOS Stream 8 and 9 available
- Defaults to unified hierarchy (cgroup2)
- systemctl-oomd (needs PSI)
- systemctl-networkd, systemctl-resolved
- 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
  - Daily rebuilds of the upstream git master
  - VM testing: [https://pagure.io/centos-infra/issue/308](https://pagure.io/centos-infra/issue/308)
Information for user hyperscalebot

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1 through 10 of 574 >>>

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Compression libraries

● Updated lz4 to 1.9.3
● Updated zstd to 1.5.1 with support for gz, xz and lz4
● ABI/API compatible – no rebuilds required
CentOS Stream 9

● Available and ready for use: https://blog.centos.org/2021/12/introducing-centos-stream-9/
● Hyperscale will target CentOS Stream 8 and 9 concurrently
● Some packages already available
● 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
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

- Test 5.14 kernel based on the CentOS Stream 9 kernel
- Development tree: [https://pagure.io/centos-sig-hyperscale/linux](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](https://pagure.io/centos-infra/issue/307)
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/
- 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 5.14.2
  - 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**
  - Pending MR to update in CentOS Stream 9 too

- **kpatch 0.9.4**
  - Includes kpatch-build
  - Backported clang PGO support
Container image

- Minimal container image based on Hyperscale repos and packages
- Build from scratch: https://pagure.io/centos-sig-hyperscale/containers-releng
- https://quay.io/centoshyperscale/centos
- podman run -a stdin,stdout,stderr -t quay.io/centoshyperscale/centos:stream8
- CentOS Stream 9 container coming soon: https://pagure.io/centos-sig-hyperscale/sig/issue/92
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
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](https://libera.chat) on Libera.Chat
- [#centos-hyperscale:fedoraproject.org](https://matrix.org) on Matrix
- Bi-weekly meetings and monthly VC hangout
  - [https://www.centos.org/community/calendar](https://www.centos.org/community/calendar)
- [https://pagure.io/centos-sig-hyperscale/sig](https://pagure.io/centos-sig-hyperscale/sig) issue tracker
- centos-devel mailing list
Questions?