

CentOS Stream 8 and ARM64 Linux Support

2nd System-on-Chip Workshop - June 11th, 2021

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on behalf of IT-CM-LCS

Change of CentOS Linux 8 EoL

- On the 8th of December 2020, the CentOS Project announced it was shifting its focus from CentOS Linux (C8) to CentOS Stream (CS)
- During the same announcement, the end-of-life for C8 was reduced from being a 10 year supported distribution to being 2 years
- Support for C8 will end at 31.12.2021
- End of Life for CERN CentOS 7 (CC7) has not changed (30.06.2024)

What is CentOS Stream?

- CentOS Stream is a Linux distribution that will be used by RedHat as the upstream for each RHEL minor release
- There will not be any major 8.x point releases (minor releases)
- Supported for 5 years (End-of-life 31.05.2024)
- Migration from CentOS Linux 8 to CentOS Stream 8 is trivial



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CentOS Stream 8 at CERN

- CentOS Stream 8 is a supported operating system
 - CERN controlled test/prod system updates
 - <https://linux.web.cern.ch/updates/cs8/>
 - OpenStack and Docker images
 - Supported with IT-related configuration management infrastructure
 - locmap is available for hosts not managed by IT centralised configuration management

Continuity after C8 EOL (31.12.2021)

- Recommended Linux operating systems for new installs:
 - CERN CentOS 7 (CC7)
 - **CentOS Stream 8 (CS8)**
- Existing CentOS Linux 8 (C8) hosts:
 - Upgrade path to CentOS Stream 8:
<https://linux.web.cern.ch/centos8/docs/migration>

And after 2024?

- “Linux Future Committee”: working group to assess the impact of current Linux usage at CERN
 - Meetings are invitation only, however all minutes/presentations/etc. are public at <https://indico.cern.ch/category/13390/>
- CERN is working with Fermilab and other facilities to decide on a path forward for the HEP community at large

Possible options

- CentOS Stream 9
 - Possible release this year
- RHEL: “no/low cost” Red Hat license
 - Currently being discussed
- New Enterprise Linux Clones (ELC):
 - AlmaLinux
 - RockyLinux

Possible options

	2021 H1	2021 H2	2022 H1	2022 H2	2023 H1	2023 H2	2024 H1	2024 H2	2025 H1	2025 H2	2026 H1	2026 H2	2027 H1
LHC Schedule	LS2		Run 3						LS3				
1. CC7 → ELC8	CC7			CC7				CC7	ELC8				
2. CC7 → ELC9	CC7				CC7			CC7	ELC9				
3. CC7 → CS9	CC7				CC7			CC7	CS9				
4. C8 → CS8 → ELC8	C8	C8	CS8	CS8				CS8	ELC8				
		CS8		ELC8									
5. C8 → CS8 → ELC9	C8	C8	CS8	CS8			CS8		CS8	ELC9			
		CS8		ELC9									
6. C8 → CS8 → CS9	C8	C8	CS8	CS8			CS8		CS8	CS9			
		CS8		CS9									

ARM64 for C8/CS8

- Initial (informal) request in 2019
- Work on C8 started late 2019
 - Designed with aarch64 in mind from the beginning
- Officially “blessed” late 2020
- Work on CS8 started early 2021, based on C8

Agreement with Experiments

- CERN IT to provide basic ARM64 OS repositories, tools
 - Upstream CentOS mirrors for CC7, no CERN customizations
 - “Built in” for C8/CS8
- Experiments to collaborate with debugging/testing
 - Issues on CERN basic tools should be reproducible on x86_64
- Access to Koji build system

What we provide

- x86_64 and aarch64 as first-class citizens
- Daily snapshots
 - <http://linuxsoft.cern.ch/cern/centos/s8-snapshots/>
- Daily Testing release: that day's snapshot
 - <http://linuxsoft.cern.ch/cern/centos/s8-testing/>
- Weekly Production release: updated on Wednesday to the previous Wednesday's snapshot
 - <http://linuxsoft.cern.ch/cern/centos/s8/>
- Docker image
 - gitlab-registry.cern.ch/linuxsupport/cs8-base
- Basic CERN RPMs
 - CERN-CA-certs, cern-config-users, cern-get-keytab, cern-krb5-conf, etc.

What is missing

- OpenStack cloud images
 - We build them, but there are no ARM64 hypervisors to run them on!
- Full ARM64 testing as part of our daily pipelines
 - Nowhere to run the tests
- Large capacity for ARM64 Koji builds
 - Only a single physical Koji builder
- Gitlab CI ARM64 runners
 - We have a custom one, but it can't be shared
- LXPLUS nodes, private build machines, etc.
 - Can't run ARM64 VMs, no ARM64 hardware either

What we're working

- Koji building aarch64 by default for CS8 tags
 - Will reduce friction for possible ARM64 services like LXPLUS
- Awaiting delivery of ARM64 hardware!
 - 5 Ampere Altra Mt. Snow servers (Q80-30 CPU, 256GB RAM)
 - Cloud team will work on supporting ARM64 VMs

Brief aside on Koji

- Koji is the CERN IT RPM build system
 - <https://koji.cern.ch>
- Uses Mock to create chroot environments to perform builds
- Open source, used by Fedora, CentOS, etc.
- Users get 3 “Koji tags” (-testing, -qa, -stable)
 - We create and host repositories from the contents of each tag
- Many use **RPMCI** to drive RPM builds from Gitlab CI

Srpm	Rpm	Lint	Koji_scratch	Koji_build	Deploy_qa	Deploy_stable
build_srpm7	build_rpm7	test_rpmlint...	koji_scratch7	koji_build7	koji_tag_qa7	koji_tag_sta...
build_srpm8	build_rpm8		koji_scratch8	koji_build8	koji_tag_qa8	koji_tag_sta...
build_srpm8s	build_rpm8s		koji_scratch8s	koji_build8s	koji_tag_qa8s	koji_tag_sta...

Can *you* build with Koji?

Sure, just package your software as an RPM!

Questions?

