



Linux Future Committee #3

2021-09-15

Ben Morrice

On behalf of CERN IT

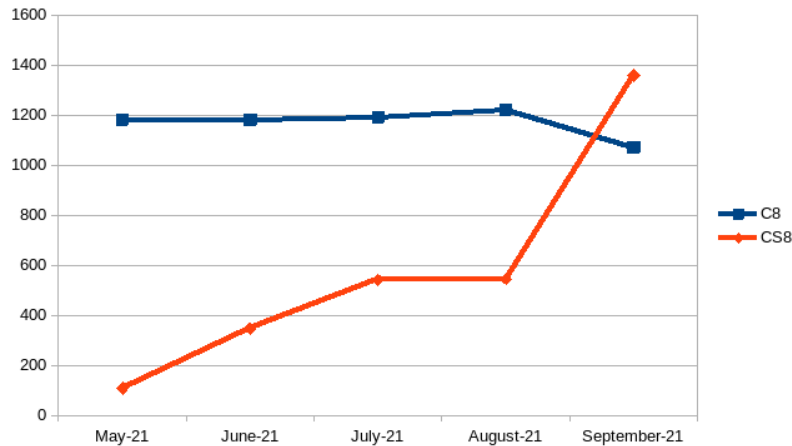
IT-CM-LCS

Agenda

- Situation today
- Recent changes
 - Enterprise Linux Clones
 - RedHat academic licensing offer
 - Joint statement
 - Proposal (Straw man)
 - CC7 support post end-of-life
- Roadmap / timeline
- CC7 migration options
- Questions

Situation today

- CC7 (CERN CentOS 7) continues to be a supported operating system, until 30.06.2024
- C8 (CentOS Linux 8) is available as a supported operating system, until 31.12.2021



- CS8 (CentOS Stream 8) is available as a supported operating system, until 31.05.2024
- Since becoming available as a supported operating system (01.05.2021), CS8 is now being actively used for production workloads

Enterprise Linux Clones

- Continued analysis of Enterprise Linux Clones (ELC)
 - RockyLinux & AlmaLinux being the two most prominent players
 - Both have viable products (stable 8.4 releases)
 - The time taken to releasing an update once available from RHEL is similar between both projects
 - Rocky is more transparent with it's build process, being based on koji versus a custom blackbox on the AlmaLinux side
 - Alma supports additional architectures, such as powerpc64le

RedHat: academic license offer

- After several months of discussion, an academic offer from RedHat has been made to CERN
- ~~The following information is subject to NDA, and has not yet been accepted by CERN~~
- NDA content removed from this presentation – please check the lfc03-20210915.pdf file for full content

CERN / Fermilab Joint statement

CERN and Fermilab have been closely evaluating the Linux distribution landscape. We observe that national cyber infrastructure organizations are increasingly supporting more science domains, so in addition to LHC- or HEP-specific considerations, it will be useful to have a choice that is widely recognized and meets the needs of broader science research.

Red Hat has made a proposal to CERN regarding an academic licensing scheme. Ultimately this would require significant overhead at external sites, and therefore we have worries on this proposal's attractiveness for other sites.

Going forward, we propose to target CentOS Stream 8 as the standard distribution for experiments. We feel that deploying CentOS Stream 8 is low risk, and we now have months of experience running production workloads on CentOS Stream 8 without any significant issues.

We feel that should issues arise with the adoption of CentOS Stream 8, it would be straightforward to reevaluate other options before CentOS Stream 8 support ends. CentOS Stream 8 is a supported distribution until May 2024. Trivial migration paths are provided by the various ELC (Enterprise Linux Clone) communities.

Continued support for existing workloads on Scientific Linux 7 and CERN CentOS 7 will be maintained as previously planned.

Proposal (Straw man)

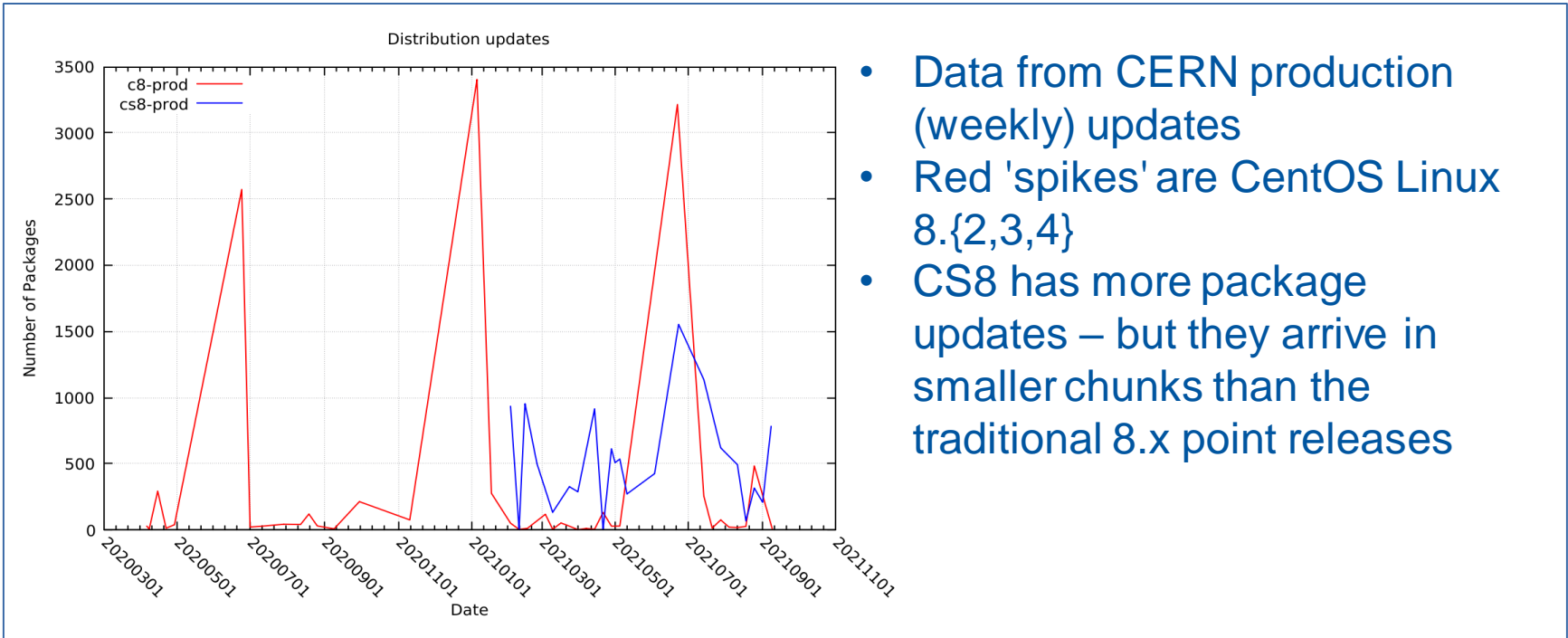
"Going forward, we propose to target CentOS Stream 8 as the standard distribution for experiments"

- Access to the latest software, tools and kernel from RedHat
- We have months of successfully operating CentOS Stream 8 in production, across diverse environments
 - Fully supported at CERN, both puppet managed and unmanaged hosts
 - Rate of change (system updates) are not as scary as we initially thought
 - System update stability
 - Try for yourself: `ssh lxplus8-future.cern.ch`
- CentOS Stream 8 is the distribution used for RedHat open source products (OpenStack, OpenShift, Ceph, etc)
- CentOS Stream 8 is free to download, distribute, and does not require any host registration

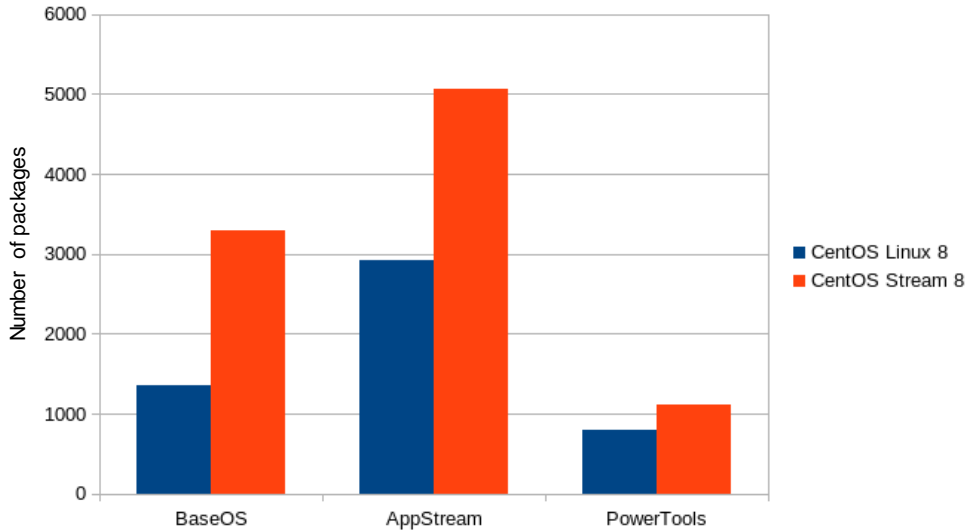
"We feel that should issues arise with the adoption of CentOS Stream 8, it would be straightforward to reevaluate other options before CentOS Stream 8 support ends"

- CentOS Stream 8 has an end of life of 31.05.2024
- Migration (without re-install) to RHEL or an ELC in the 8 family is trivial

CentOS Stream 8: update frequency



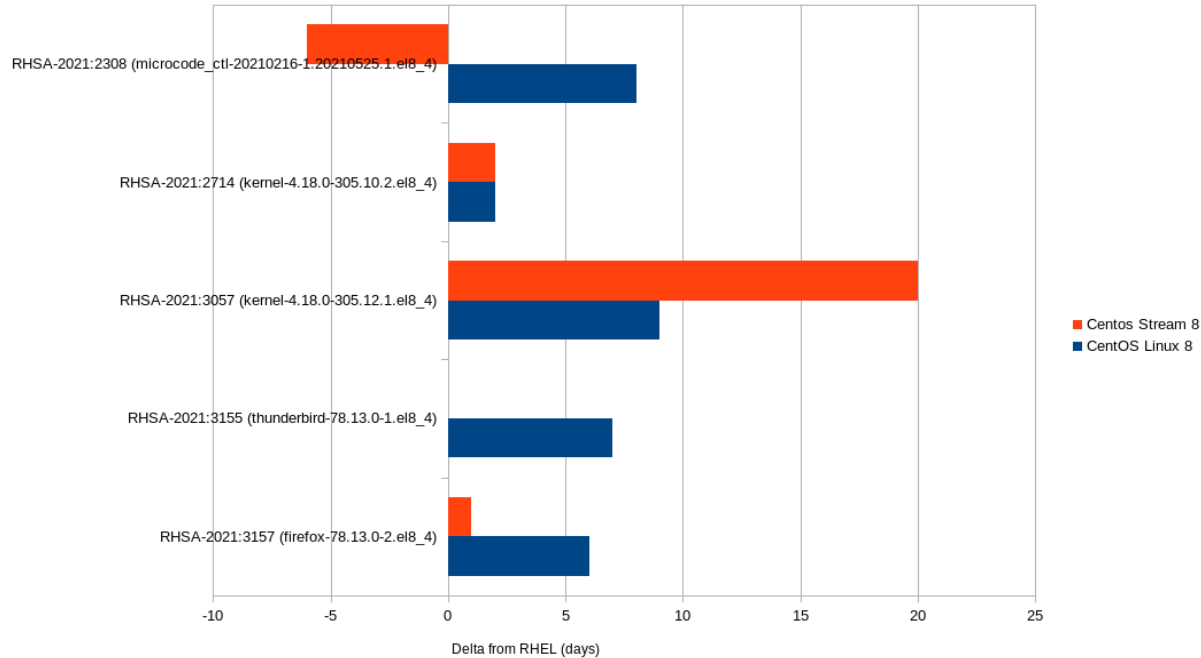
CentOS Stream 8: iteration of change



- CentOS Stream 8 has more version history (# rpms)
- Faster iterations of change

```
dnf repoquery \  
--repofrompath=tmprepo,http://linuxsoft.cern.ch/cern/centos/$dist/$repo/x86_64/os \  
--repo=tmprepo --arch x86_64
```

C8 versus CS8: CVE response time



CC7: support after 30.06.2024

- CERN CentOS 7 support ends 30.06.2024
- Security team considers tolerating non-GPN hosts (TN) that run past EOL, owners assuming all responsibility. However, for the TN, a review and consolidation of remote automatic and human accesses towards the TN is an essential prerequisite for this "tolerance". For the ENs, the responsibility of decision is with their corresponding spokesperson.
- Request for roughly ~400 hosts within experiments that reside on the GPN to remain on CC7
- BE Front End Computers (~2000) are not able to be upgraded from CC7 before mid LS3

CC7: support after 30.06.2024 (cont)

- CERN IT are investigating rebuilding content from the RedHat Extended Lifecycle Support (ELS) product, ensuring that critical security updates continue
 - Scope / frequency is being defined
 - Kernel / system libraries, other?
 - Monthly/quarterly/adhoc (dependent on risk severity)
- We are studying how a **minimal** subset of IT services could continue to support CC7 clients after 30.06.2024
 - Repository content (including EPEL7) will need to be available on linuxsoft.cern.ch
 - Kerberos – authentication and keytab management (eg: `cern-get-keytab`)
 - LDAP/DNS/NTP/DHCP (clients, SSL cipher compatibilities, etc)

Roadmap / timeline

- CentOS Linux 8 support ends on 31.12.2021
- CentOS Stream 9 is due to be released Q4 2021 (expected end of support Q4 2026)
- RedHat academic licensing offer potentially available Q1 2022
- CERN and Fermilab will continue to evaluate the distribution landscape, especially once RHEL9 and associated ELC (Enterprise Linux Clones) for 9 are released (2022)
- Once CentOS Stream 9 is released, we will work to support this distribution at CERN (likely Q1 2022)
- CentOS Stream 8 support ends on 31.05.2024
- CERN CentOS 7 support ends on 30.06.2024
- CERN IT aims to provide CC7 Extended Lifecycle Support until 30.06.2026

CC7 migration options

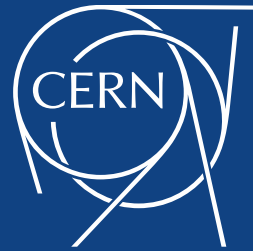
| | 2021 H1 | 2021 H2 | 2022 H1 | 2022 H2 | 2023 H1 | 2023 H2 | 2024 H1 | 2024 H2 | 2025 H1 | 2025 H2 | 2026 H1 | 2026 H2 | 2027 H1 | |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|-----------|--|
| LHC Schedule | LS2 | | Run 3 | | | | | | LS3 | | | | | |
| 1. CC7 → CS8 | CC7 | CC7 | | | | | | CC7 | Future OS | | | | | |
| | | CS8 | | | | | | CS8 | | | | | | |
| 2. CC7 → CS9 | CC7 | | | CC7 | | | | CC7 | CS9 | | | | Future OS | |
| | | | | CS9 | | | | | | | | | | |
| 3. CC7 → RHEL8 | CC7 | CC7 | | | | | CC7 | RHEL8 | | | | | | |
| | | | RHEL8 | | | | | | | | | | | |
| 4. CC7 → RHEL9 | CC7 | | | | CC7 | | | CC7 | RHEL9 | | | | | |
| | | | | RHEL9 | | | | | | | | | | |

Summary

- CERN CentOS 7 is still a supported operating system
- CentOS Stream 8 is now a recommended operating system for new installations
- CentOS Stream 9 will be supported by CERN, once released
 - Due to timings, the migration path from CC7->CS9 may make more sense than CC7->CS8
- RHEL 'research' site-license option is being reviewed by management

Questions ?





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