



IT Technical-Users Meeting (ITUM34)

News regarding future Linux distributions

2021-10-18

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On behalf of CERN IT

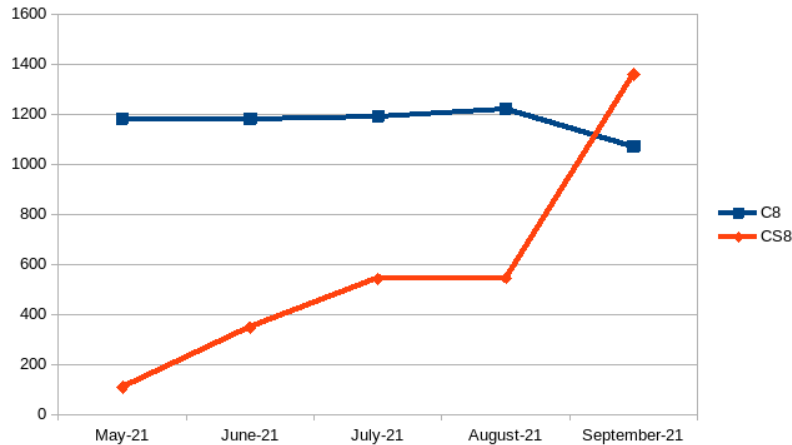
IT-CM-LCS

Agenda

- Situation today
- Recent changes
 - Red Hat academic licensing offer
 - CentOS Stream
- Roadmap / timeline
- 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

Red Hat: academic license offer

- After several months of discussion, an academic offer from Red Hat has been made to CERN
- The following information is subject to NDA, and has not yet been accepted by CERN

Red Hat: academic license offer

CERN

- Unlimited site license for RHEL (Red Hat Enterprise Linux) at CERN (current and future versions)
- Additional Red Hat products are NOT included (Extended Lifecycle Support, Red Hat Virtualization, etc)
- Support is self support only

"Extended research network"

- Up to 1000 free RHEL hosts (per site) – depending on how the site/institution is classified
 - Academic institutions – RHEL can be used for any non-commercial "research"
 - Non-Academic institutions (non profit) – RHEL can be used, only if the majority of the "research" is focused on CERN (> 50%)
- Other sites are also able to negotiate directly with Red Hat

Red Hat: What this means in practice

We will likely need to have two Red Hat contracts at CERN

1) per-instance, full support model - to be used on systems that require support (primarily Oracle databases)

2) Site-license (self support). We expect a large number of systems from the experiment and accelerator sectors will be keen to move to RHEL directly, especially those that use commercial software on top (such as WinCC OA)

Red Hat: Summary

- Red Hat's offer will help CERN in *some* use cases, but not all ...
- RHEL will NOT be a silver bullet for HEP
 - The offer is on the table for other sites to potentially use, but it is completely optional

CERN is not working alone

- CERN has been working closely with FNAL and other HEPiX sites
 - Analysis of scientific use cases/scenarios for CERN/FNAL/HEP
 - A joint statement on our findings/proposal will be published shortly on <https://linux.cern.ch>
- Linux Distribution landscape is complicated
 - We've outgrown the "*1 size fits all*" approach
 - Different use cases call for different distributions
 - It's inevitable that multiple distributions will need to be supported

CERN / Fermilab Joint statement (draft)

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 IT services and experiment offline 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)

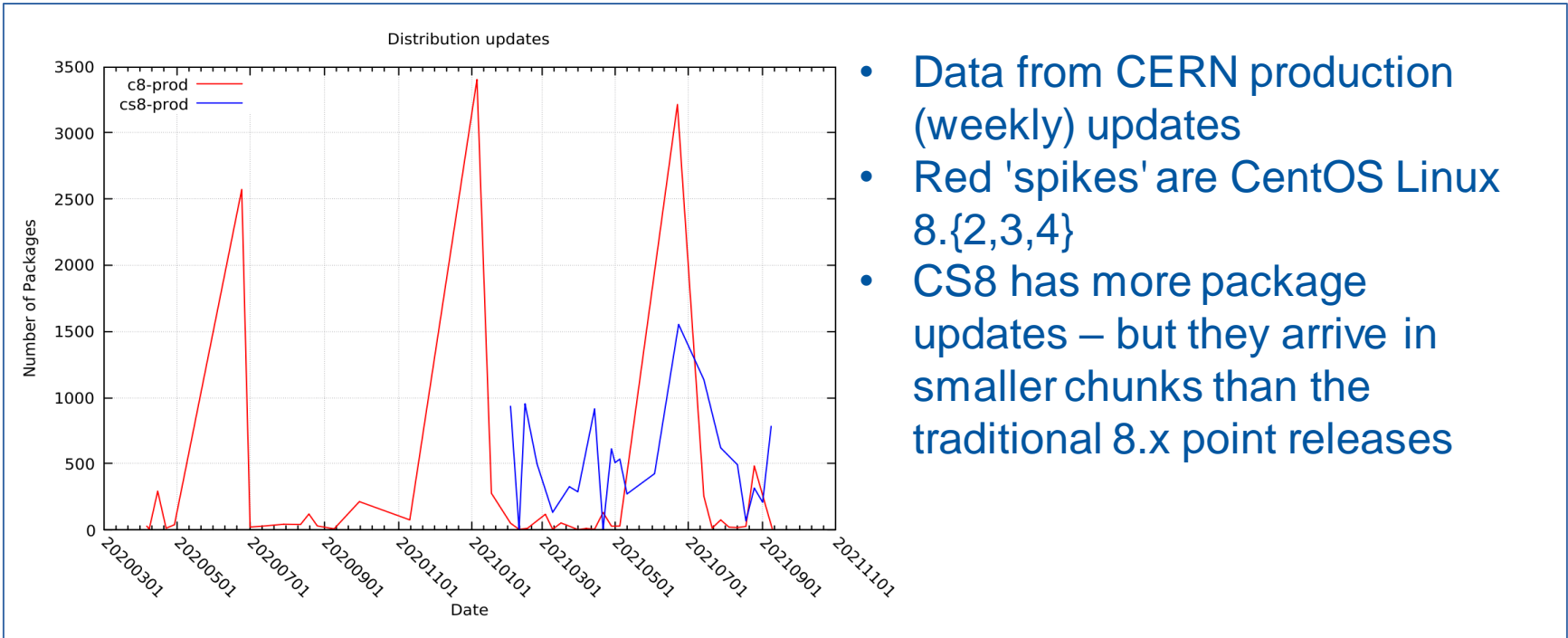
"Going forward, we propose to target CentOS Stream 8 as the standard distribution for experiments"

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

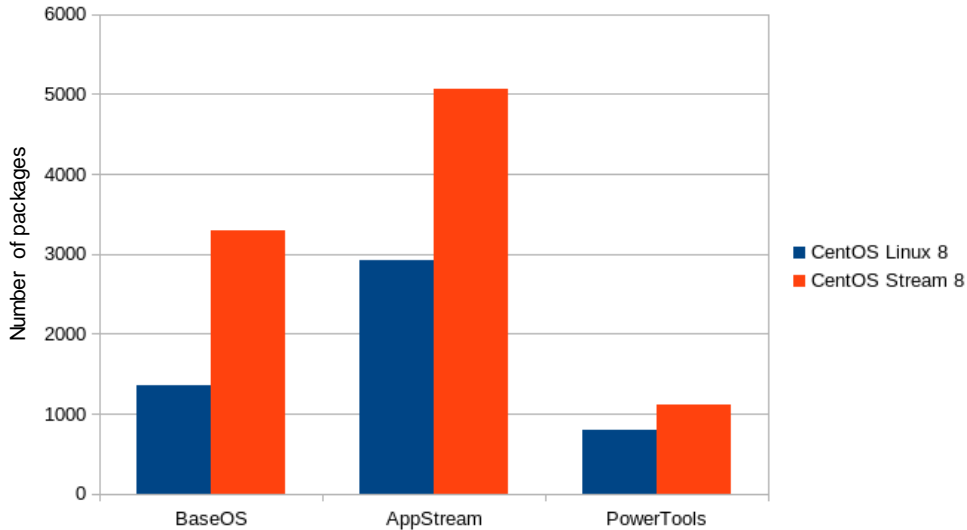
"We feel that should issues arise with the adoption of CentOS Stream 8, it would be straightforward to reevaluate other options before CentOS Stream 8 support ends"

- 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 (ref: <https://linux.web.cern.ch/centos8/docs/migration>)

CentOS Stream 8: update frequency



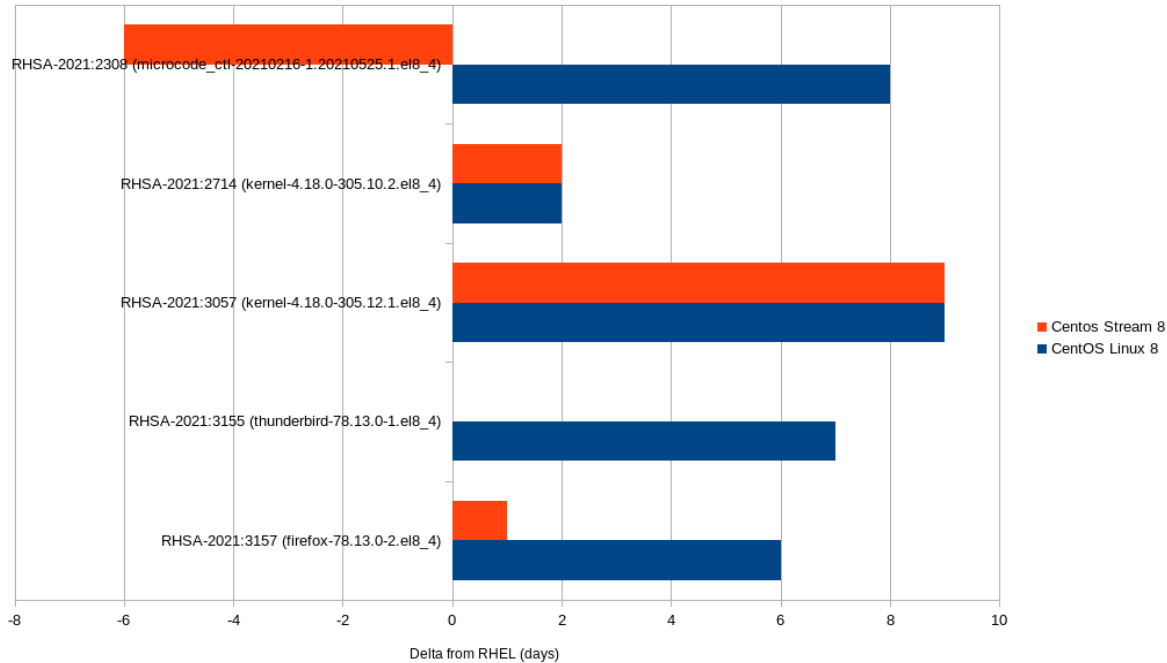
CentOS Stream 8: iteration of change



- 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



Proposal: Why CentOS Stream, and not an ELC (Enterprise Linux Clone)?

- CentOS Stream is still a Red Hat product
 - Red Hat is heavily invested in it's success
- Latest kernel, software (released before RHEL, and ELCs)
- Latest bug fixes (released before RHEL, and ELCs)
- Strong open community, which allows the ability to influence the development of the OS (and downstream RHEL/ELC)
 - ELCs are a simple clone of RHEL, no real ability to contribute back to the community
- ELCs (Rocky/Alma) are still relatively 'new'
 - Will their traction continue with the release of RHEL8.5, and RHEL 9.0?

Proposal: Why CentOS Stream, and not RHEL?

- This option is nice for CERN, but could prove awkward during collaboration with CERN affiliated sites
 - Sites may be subject to pay
 - Extra burdens for registering / auditing RHEL systems
 - Sites would need their own content mirroring
- Many upstream projects are not (yet) built against RHEL
 - OpenStack, OpenShift, Ceph, etc
- Using RHEL exclusively is not realistic, but it might be the best option for some use-cases
 - Those needing longer lifecycles that can't virtualise/containerise

Roadmap / timeline

- CentOS Linux 8 support ends on **31.12.2021**
 - See <https://cern.service-now.com/service-portal?id=outage&n=OTG0065266>
 - Strongly recommended to migrate to CentOS Stream 8 (<https://linux.web.cern.ch/centos8/docs/migration>)
- CentOS Stream 9 is due to be released Q4 2021 (expected end of support Q4 2026)
 - Once released, we will work to support this distribution at CERN (likely Q1 2022)
- Red Hat 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)
- CentOS Stream 8 support ends on 31.05.2024
- CERN CentOS 7 support ends on 30.06.2024

Questions ?





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