



# Linux Users Meeting

Life cycles, updates, and EL8

# Scientific Linux 6

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Scientific Linux 6 and Scientific Linux Fermi 6 reach end of life

**November 2020**

**PLAN YOUR MIGRATIONS NOW**

Tissue notices will go out following our standard practice:  
notify before any network blocks are performed

# Scientific Linux 7

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Scientific Linux 7 reaches end of life

**June 2024**

The Fermilab Context is the traditional way to add Fermilab Specific behaviors.

<http://ftp.scientificlinux.org/linux/scientific/7x/contexts/fermilab/docs/>

# Scientific Linux 8

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There is no Scientific Linux 8.

<https://listserv.fnal.gov/scripts/wa.exe?A2=SCIENTIFIC-LINUX-ANNOUNCE;11d6001.1904>

Fermilab will utilize CentOS 8 instead.

# Getting CentOS 8

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We have installed a local mirror of CentOS on the Fermilab network.

If you are using the 'fastestmirror' plugin, it should automatically select the Fermilab mirrors for software updates. Or you can just point there directly.

Installation media can be fetched from CentOS.org or our local mirror <https://linux-mirrors.fnal.gov/linux/centos/>.

This mirror system also hosts public mirrors for [EPEL](#) and [ELRepo](#). If you use 'metalink' or 'fastestmirror', you've probably been using them for a while!

The default for fastestmirror is disabled.

# CentOS 8 changes from Scientific Linux

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## CentOS Similarities to RHEL8

- CentOS 8 does not distinguish between updates
  - There is no separate updates repo
  - There is no separate security repo
- CentOS 8 does not provide “point releases” - (8.0, 8.1, etc)
  - All packages are still released
  - Since updates are not in a separate repo there is no “point release”
  - There is a frozen kickstart tree without errata if you really really need it
    - You must install security updates so using this is no real benefit
- CentOS 8 does not automatically install software updates

## CentOS Differences from RHEL8

- CentOS 8 does not provide updateinfo.xml
- CentOS 8 Stream is a place for RHEL to test out new features/fixes
  - It is an OPTIONAL extension of CentOS 8 (off by default)
- CentOS 8 Extras repo is a place for Community Resources
  - It is an OPTIONAL extension repo (on by default)
- Several other repos are shipped by default

# How To Fermi-ize CentOS 8

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Detailed instructions are at

<https://linux-mirrors.fnal.gov/linux/fermilab/centos/8/notes.html>

The process is very similar to that of SL7.

It works on all CentOS 8 arches.

- 1) You can use kickstart to add what you desire
- 2) You can manually add the repo and select the packages later
- 3) There is a “full automation” rpm that will perform these tasks on your behalf

Look over the notes and see what works best for your workflow.

# Linux At Fermilab

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I'd encourage everyone to read the Linux Baseline Document: [CS DocDB 1065](#).

It was updated on February 24 2020.

The baseline includes changes that reflect EL8 and other new information.

All Linux systems in the General Computing Environment must follow the baseline or obtain an exemption from the Computer Security Team.

# Questions?

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Before we hit the EL8 features and adventures....

Any questions on the high level bits?

# EL8 – Read the Release Notes

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There is a significant amount of information in these documents that cannot be easily summarized. There are a number of very interesting things not covered at all within this presentation – such as `tlog`, BBR, and NIS support. The rest of this presentation will summarize *some* of these documents.

[https://access.redhat.com/documentation/en-us/red\\_hat\\_enterprise\\_linux/8/](https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8/)

**You absolutely must read** “[Considerations in adopting RHEL8](#)”, “[Installing, managing, and removing userspace components](#)”, and several others depending on your computing workload.

**Seriously! You Need To Read These!**

# EL8 – A high level overview

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## The Good

- [Yum is replaced](#) with `dnf` – still responds to “yum” (`yum-cron` → `dnf-automatic`)
- Packages can now provide “[Weak Dependencies](#)” (`Suggests: something`)
- So many things support “include .d” - `/etc/krb5.conf.d/!`
- [update-crypto-policies](#)
- [Podman](#) is fully supported ([user namespaces](#) still Tech Preview)
- The [NFT](#) based firewall is much faster (`iptables` still packaged, just use [firewalld](#))
- [tIPC](#) is supported! [KernelShark](#) is supported! [XFS Reflink](#) is supported!
- Wayland Display server is fully supported
- [Universal Base Image](#) (UBI) Containers are free (these run real RHEL!)
- The `rhel-system-roles` rpm comes with some neat new roles

## The Bad

- The [Cockpit Management Server](#) is in a number of default groups
  - It permits `root` login **by default with root's password!**
  - It is only permitted on the Fermilab Network if [you Kerberize it](#).
- Code Ready Builder / Power Tools is not supported
  - More on this later

# EL8 – A high level overview

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## The Ugly

- NetworkManager is **required**
  - `/etc/init.d/network` is gone!
    - It was not OCI Network compatible
    - `/etc/sysconfig/network-scripts/` is *not* gone
      - NetworkManager uses those configs (or others if you want)
    - `ifup/ifdown` are wrapper scripts around NetworkManager now
  - `networkd` is working its way **into EPEL8**.
- Fermilab `kcron` is changing again!
  - No need to run 'kcron' after running 'kcroninit'
  - Keytabs are in a different location (see the new manpages in the RPM)
  - Not shipping a 'kcron' command (could just be `exec $@`)
- `pam_krb5` is not shipped!
  - You can use `sssd` to get compatible behavior
- `ntpd` is gone, use `chrony` it is on EL7 already
- `authconfig` is **gone**
  - You can use `authselect` for *some similar* features
- **AppStream**
  - You will hear much more on this later

# EL8 Support Lifecycle

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There are three repos from RHEL/CentOS

- 1) Base OS
- 2) AppStream
- 3) Code Ready Builder / Power Tools

RPMs from BaseOS(1) are supported until 2029. They will be tracked for security issues and should maintain a high standard of ABI/API compatibility.

This is the support and lifecycle you are used to with RHEL.

RPMs from Code Ready Builder / Power Tools(3) are **not supported** or tracked for security errata.

Packages in this repo are “fully unsupported”.

# EL8 Support Lifecycle : CRB / PowerTools

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RPMs from Code Ready Builder / Power Tools are not supported or tracked for security errata. There is no promise or intent to track any security issues or bugs from these RPMs. They may be fixed over time. They may not be.

This is slightly different from what you find in EPEL today. EPEL can (and does) withdraw packages with known security issues that no one has fixed. CRB complements EPEL8 and they are at times related. Some EPEL8 packages may `Require` CRB rpms.

RPMs in CRB/PowerTools will remain part of the release because they are part of the release.

CRB/PowerTools **generally contains** “weird stuff” and development libraries. Because of this, the risk of security issues in this repo is low – but not strictly zero. If the BaseOS library is updated, the CRB Development library or runtime binary from the same source RPM will be updated too. But it may not have a patch for your issue.

If you have RPMs from CRB/PowerTools and have performed a `'yum update'` you may not be security patched.

# RHEL 8 – BaseOS vs AppStream

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Packages within the BaseOS repo are considered the foundational packages to the operating system.

- Kernel
- Rsyslog
- RPM
- Bash
- Glibc
- Etc

The packages in this repo are generally similar to what you would get from ‘@base’ and ‘@core’ in kickstart – with a few exceptions (~~dnf~~ is in AppStream).

As of early February 2020 there are about 1,200 [packages in BaseOS](#).

Remember this includes all software updates for BaseOS (including 8.1) since May 2019 when RHEL8 was released.

Everything else is in AppStream or CRB/PowerTools

For comparison, SL 7.7 (no updates) contains almost 10,200 packages.

# RHEL 8 – What is in AppStream

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As of early February 2020, about 4000 packages (including their updates).

- Authd
- Container Tools
- GCC
- Git
- Apache Webserver
- MariaDB
- Maven
- Mercurial
- MySQL
- Nginx
- NodeJS
- OpenJDK
- Perl
- PHP
- Python
- Redis
- Ruby
- Scala
- Swig
- Varnish
- [And Many More Items!](#)

This is Great! You can get “the latest” versions of these applications/languages once Red Hat packages them up!

# RHEL 8 – AppStream: Why Should I Care

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The AppStreams provide different versions of software Applications (modules)

You can **only** have one Stream (version) for a given Application (module).

You can have PostgreSQL 9.6 **or** PostgreSQL 10 on your system.

You cannot have both.

You can have multiple Applications (modules) – with one Stream (version) each.

You can install Apache Webserver 2.4, PHP 7.3, Python 3.6, PostgreSQL 12, Redis 5, and others on the same host. This is the expected way to install a modern web application in EL8.

But, once you pick a stream, all other streams for that software application / environment / module are masked out and **yum cannot see their packages.**

# RHEL 8 – AppStream: Why Should I Care

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Packages from AppStream have End of Life dates BEFORE 2029

<https://access.redhat.com/support/policy/updates/rhel8-app-streams-life-cycle>

The End of Life date for PostgreSQL 9.6 RHEL 8 AppStream is Nov 2021.

The End of Life date for PostgreSQL 10 RHEL 8 AppStream is May 2024.

The End of Life date for PostgreSQL 12 RHEL 8 AppStream is Feb 2025.

Just running `'yum update'` will not resolve this issue. The '10' and '12' streams are masked out because you selected the '9.6' stream. This is a good thing.

The on disk data file format of PostgreSQL **CHANGES** between 9.6, 10, and 12.

They **MAY** be able to read the old data files. **They may not!**

When running an application it is **YOUR** responsibility to ensure it is not end of life.

When upgrading the application it is **YOUR** responsibility to ensure it works once upgraded.

# RHEL 8 – AppStream: Why Should I Care

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**Q:** “My server runs two applications, one that uses PostgreSQL 9.6 server and one that uses PostgreSQL 10 server. They run on different ports of the same server. I have an exemption from CST, so that I can keep running after End of Life versions of PostgreSQL. How do I run both PostgreSQL 9.6 and PostgreSQL 10 on the same EL8 system?”

**A:** EL8 AppStream rpms cannot do this.

Some third party repo *might* be able to, but the AppStream packages shipping with EL8 will not do this.

There are several good ways to segment your workloads so that your application run-times are more clearly defined.

This is where we start talking about containers.....

# RHEL 8 – AppStream: What Should I do?

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- ☑ Read [the AppStream documents](#)!
- ☑ Perform Detailed Software Auditing for each EL8 system
  - This includes running the Fermilab OCS Inventory Client
- ☑ Establish a migration policy for AppStreams nearing end of life
  - Tell your users the policy and build notification tools / policies

Recommended workflow:

- ▶ Run containers **AND** establish a way to audit the containers your hosts run.
  - Make sure the container owner understands it is their problem now!
    - Containers can pick which version of software they run explicitly
      - Remember [UBI containers](#) exist!
    - This moves the problem to a more confined area
      - It does not eliminate it!
  - The container owner must understand what AppStream means for the application within the container.
    - Make them read the documentation!

# More Information on EL8

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If you want to know more about EL8 features for your environment, have questions you'd like to chat about, or something similar to one of those:

Let us know and we can set up a meeting where we can cover relevant topics at the level of detail suitable for your needs and interests!  
*(if you tell us what they are)*

Contact **Scientific Linux System Engineering**  
through the Fermilab Service Desk for more information.

You can also reach out to [LINUX-USERS@LISTSERV.FNAL.GOV](mailto:LINUX-USERS@LISTSERV.FNAL.GOV)  
with questions or the CentOS forums.

# Questions?

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