



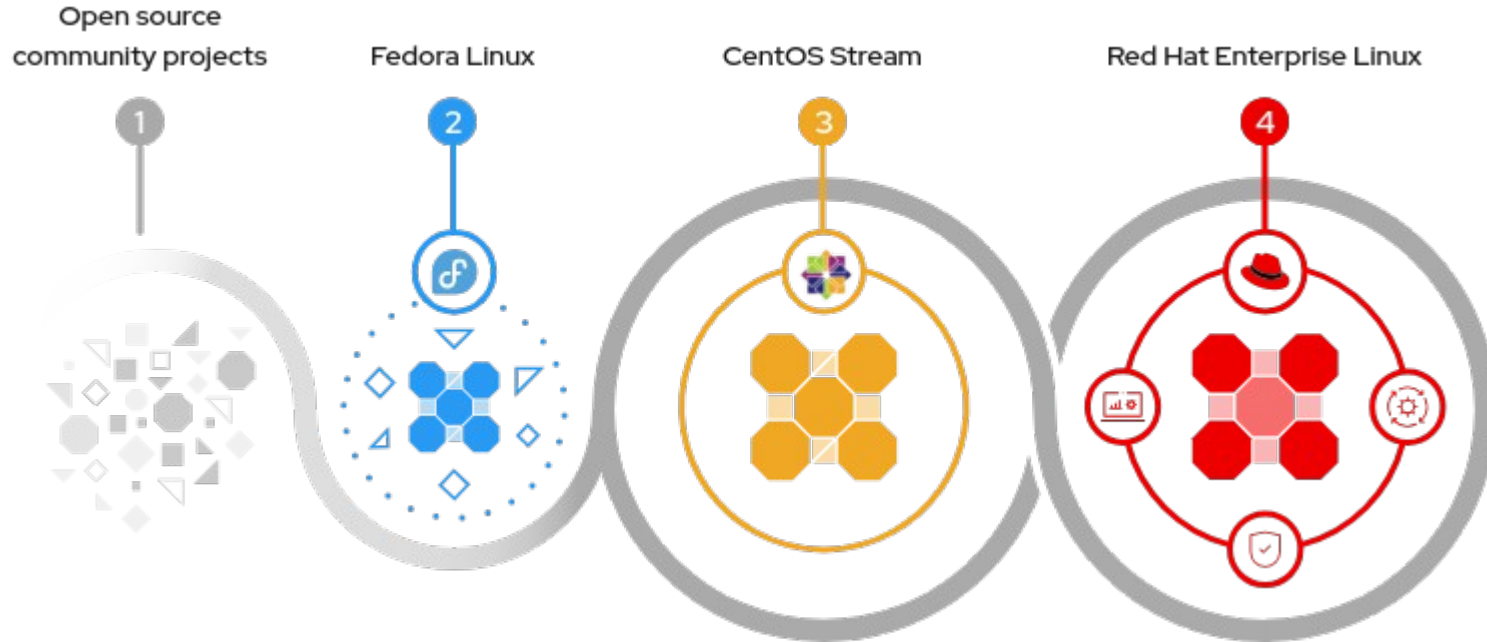
Enabling Ceph on the next version of Enterprise
Linux

Presentation Goals



- Understand how EPEL fits into Enterprise Linux ecosystem.
- Scope out work to enable Ceph to ship on el10 as the primary platform.
 - What that means
 - How we get there

Red Hat's "Enterprise Linux" ecosystem

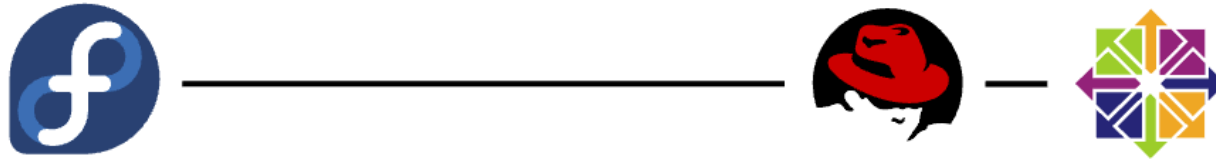


<https://www.redhat.com/en/topics/linux/what-is-centos-stream>

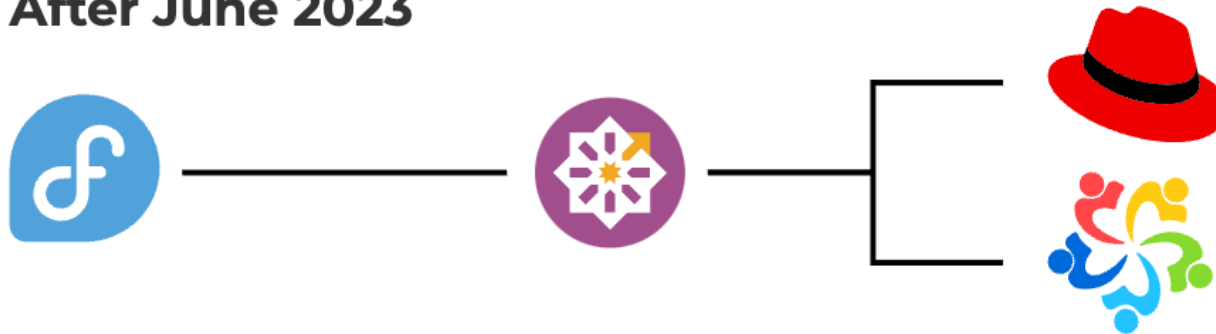
Enterprise Linux ecosystem, continued



Pre-CentOS Stream (2004 - 2019)



After June 2023



original by @carlwgeorge@fosstodon.org; adapted for AlmaLinux

<https://wiki.almaLinux.org/Comparison.html>

What is EPEL?



- Extra packages for Enterprise Linux
- Hosted in the Fedora Project
 - Copies (backports) of Fedora packages
 - but for *Enterprise Linux*, not for Fedora Linux!



<https://docs.fedoraproject.org/en-US/epel/>

Why EPEL?



- RHEL often lacks packages we need for Ceph.
- **EPEL gives you** a place to promote, support, and benefit from **packages that exist in Fedora that Red Hat did not include in RHEL.**



How do I get a package into EPEL?



Look for the “EPEL package request guide” in Fedora docs.

A screenshot of a web page from the Fedora documentation site. The page has a blue header with a search bar on the right that says "Search Docs". Below the header, there is a breadcrumb trail: a home icon followed by "EPEL / Request Packages". The main heading is "EPEL Package Request" in a large, bold, dark blue font. Below the heading, there is a paragraph of text: "When requesting a Fedora package for EPEL, the steps are a little different depending on your ability or willingness to help." Below this paragraph is a "Note" section, indicated by a blue vertical bar on the left and a blue circle with an 'i' icon. The text of the note reads: "Before requesting a package in EPEL, it must first be in Fedora. There are some rare exceptions where an EPEL-only package is necessary, but those are out of scope for this guide." The page has a clean, modern design with a white background and blue accents.

<https://docs.fedoraproject.org/en-US/epel/epel-package-request/>

But what if I **really** need that package?



You can package it and maintain it yourself!

Start by **becoming a Fedora packager**, and that will lead to maintaining the package for EPEL.

(This is how I got started in Fedora!)

The screenshot shows a web page with a blue header containing a search bar labeled "Search Docs". Below the header is a breadcrumb trail: "EPEL / Helping EPEL / Package Maintainers". The main heading is "EPEL Package Maintainers". The text below explains that EPEL packages are maintained by community members who respond to bug reports and update packages. A sub-heading "Joining the EPEL Package Maintainers" is followed by the text "There are several ways you can join the EPEL package maintainer group:" and a list item "1. If you are an existing Fedora package maintainer, you can maintain EPEL packages by becoming a".

Search Docs

EPEL / Helping EPEL / Package Maintainers

EPEL Package Maintainers

EPEL packages are maintained by members of the community. These maintainers respond to bug reports, update packages and add new packages to the collection as needed. EPEL packagers are members of the Fedora "packagers" group.

Joining the EPEL Package Maintainers

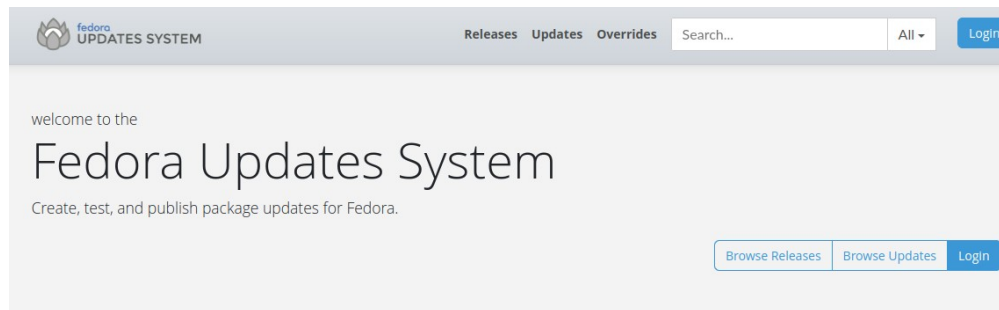
There are several ways you can join the EPEL package maintainer group:

1. If you are an existing Fedora package maintainer, you can maintain EPEL packages by becoming a

I can't do packaging, how else can I help?



You can also **test the epe1-testing packages** before they are released to assure their quality. We use Bodhi as a platform to manage updates and quality assurance, and **you can use it to report your testing!**



 81
critical path updates in testing

 37
security updates in testing

 691
total updates in testing

What does Ceph use in EPEL?



Many **runtime** dependencies.

Many more dependencies at **build time**.

What does Ceph use in EPEL?



In `quay.io/ceph/ceph:v19.2.0` container image:

- `abseil-cpp`
- `gperftools-libs`
- `libarrow`
- `liboath`
- `libunwind`
- `luarocks`
- `parquet-libs`
- `re2`
- `thrift`
- `grpc`
- 35 python libraries (eg `asyncssh`)

Where is 10?



- CentOS Stream 10: early CI builds available
 - `quay.io/centos/centos:stream10-development`
- Alma 10: snapshots available
- RHEL 10: future

- EPEL 10: available now

What's available in el10?



- GCC 14.2.1
 - (no alternative gcc toolsets yet)
- Kernel 6.11.0
- Python 3.12

Bringing up a new EPEL version



- 1) Set up the new el10 environment
- 2) Run Ceph's `./install-deps.sh`, note failures
- 3) Record the missing packages
- 4) *Package them*
- 5) Go to Step 2 above

Sharing with the world



- <https://github.com/ktdreyer/ceph-el9>

The screenshot shows the GitHub repository page for 'ceph-el9'. At the top, it indicates the repository is public and has 2 unwatchers. Below this, there are navigation options for 'main' branch, 1 branch, and tags. A search bar and 'Add file' and 'Code' buttons are visible. The repository is owned by 'ktdreyer' and has 42 commits. A list of files is shown, including README.rst, compare-brew-epel, copy-stream, and el9-ceph-x86_64.cfg. The README file is selected, showing the title 'Building Ceph's dependencies for EPEL 9' and the first section 'Step 1: Create a new Copr repo'.

Public

Pin Unwatch 2

main 1 Branch Tags

Go to file Add file Code

ktdreyer compare-brew-epel: print tag 79212e4 · 6 months ago 42 Commits

README.rst	copr epel-9 adjustments	last year
compare-brew-epel	compare-brew-epel: print tag	6 months ago
copy-stream	fix less-than-or-equal comparison in Build class	6 months ago
el9-ceph-x86_64.cfg	copr epel-9 adjustments	last year

README

Building Ceph's dependencies for EPEL 9

Our strategy is to fork packages from Fedora Rawhide into EPEL 9, like [we did](#) a few years ago for EPEL 8.

Step 1: Create a new Copr repo

The screenshot shows the Fedora Copr repository page for 'ceph/el9'. The page has a blue header with the 'fedora copr' logo. Below the header, there is a breadcrumb trail: Home > ceph > el9 > Overview. The repository name 'ceph / el9' is displayed, along with the Project ID: 46277. A navigation menu includes Overview, Packages, Builds, Modules, and Monitor. The 'Description' section is visible, stating: 'This repository holds all the Ceph RHEL 9 dependencies that are not yet present in RHEL 9 or EPEL 9.'

fedora copr

Home > ceph > el9 > Overview

ceph / el9
Project ID: 46277

Overview Packages Builds Modules Monitor

Description

This repository holds all the Ceph RHEL 9 dependencies that are not yet present in RHEL 9 or EPEL 9.

Development workflow



Local dev
environment





Enabling Ceph on el10: Beyond EPEL

Beyond EPEL: road to full el10 support



- CentOS Storage SIG (nfs-ganesha comes from here)
- Ceph integration bugs
- el10 in Sepia lab
- Containerfile FROM statement
- Teuthology qa YAML changes

CentOS Storage SIG



- Community build system, packaging, wiki
- **Alternative to EPEL** – provides more flexibility, control, and complexity.

- nfs-ganesha comes from here
- Future collaboration?

The screenshot shows the CentOS Community Build Service (Koji Web) interface. The header includes the CentOS logo, the text "CentOS Community Build Service", and a search bar with a "SEARCH" button. The navigation menu includes "Summary", "Packages", "Builds", "Tasks", "Tags", "Build Targets", "Users", "Hosts", "Reports", "Search", and "API". The main content area is titled "Welcome to Koji Web" and "Recent Builds". Below this is a table with the following columns: ID, NVR, Built by, Finished, and State.

ID	NVR	Built by	Finished	State
56869	centos-release-ceph-squid-1.0-1.el10s	kkeithle	2024-11-05 15:21:22	✓
56868	ceph-19.2.0-1.el10s	kkeithle		✗
56867	openstack-kolla-19.0.0-0.1.0rc2.el9s	rdobuilder	2024-11-05 10:03:16	✓
56866	systemd-257-devel-20241105020249.hs.el9	hyperscalebot	2024-11-05 02:15:19	✓
56865	systemd-257-devel-20241105020256.hs+fb.el10	hyperscalebot	2024-11-05 02:14:20	✓
56864	systemd-257-devel-20241105020256.hs+fb.el9	hyperscalebot	2024-11-05 02:16:28	✓
56863	systemd-257-devel-20241105020249.hs.el10	hyperscalebot	2024-11-05 02:11:32	✓
56862	openvswitch3.3-3.3.0-58.el9s	msantana	2024-11-04 16:29:22	✓
56861	kernel-automotive-5.14.0-525.474.el9lv	jfaracco	2024-11-04 14:52:34	✓
56860	rdo-openvswitch-3.4-1.el10s	jcapiiao	2024-11-04 14:04:12	✓

Ceph integration bugs for el10



- Haven't gotten far yet
- OpenSSL API change: <https://tracker.ceph.com/issues/68059>

el10 in Sepia lab



- Will require Fog administrator work
- CentOS Stream 10 on old hardware:
 - Fatal glibc error: CPU does not support x86-64-v3
 - Alma Linux 10 has reversed this requirement for now

el10 in Containerfile



GitHub repository view for `ceph / ceph`. The `Code` tab is selected. The current branch is `main`. The file path is `ceph / container / Containerfile`.

Navigation tabs: `Code` (selected), `Blame`.

```
1 ARG FROM_IMAGE="quay.io/centos/centos:stream9"
2 FROM $FROM_IMAGE
```

el10 testing in Teuthology



- Test suites are a series of YAML files and symlinks
- Ensuring this all works on quay.ceph.io



- [instagram.com/thefedoraproject/p/CkRXZFmulOZ](https://www.instagram.com/thefedoraproject/p/CkRXZFmulOZ)