Continuous integration for a Linux distribution
CentOS Stream way

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Who am I

- Formerly Release Engineer for Mirantis OpenStack distribution and Fuel
- Currently Senior Principal Engineer in Red Hat

- CI for RHEL and CentOS Stream
- Member of RHEL 9 Bootstrap team
- Member of Fedora Council

See also:
FOSDEM 2022, “CentOS Stream: stable and continuous”
https://fosdem.org/2022/schedule/event/centos_stream_stable_and_continuous/
Linux distribution is continuous

- Incremental atomic updates
- Bootstrap the buildroot once, continue building forever
- Circular build dependency on itself
For example, Fedora Linux
Red Hat Enterprise Linux distribution

- New major release once in several years
- New minor release once in several months
- Every major release inherits code from Fedora
Before RHEL 9

Fedora Rawhide

Fedora N

Red Hat Enterprise Linux

CentOS Linux

bootstrap magic
After

- Fedora Rawhide
- Fedora ELN
- Fedora 34
- CentOS Stream 9
- Red Hat Enterprise Linux 9
Changes

Fedora Rawhide
Fedora ELN
Fedora 34
CentOS Stream 9
Red Hat Enterprise Linux 9
1: Fedora ELN

Subset of Fedora Rawhide packages built into the EL-like buildroot

Playground to propose and try most controversial changes.
2: pre-release development

Watch how RHEL major release is prepared,
send patches, provide feedback, change the outcome
3: post-release continuous update

- development of a next minor release
  - CentOS Stream 8
- CentOS Linux 8
- RHEL 8.0
- RHEL 8.1
- RHEL 8.2

change

time

RHEL ABI Compatibility
CentOS Stream update path

Zuul CI

CentOS Stream

GitLab

MR checks

sources

build

build environment

-gate

?package checks

-pending

compose

repository, images

?compose checks

mirrors

is RHEL

is in sync with RHEL

owned by CentOS Project

CentOS Stream

Koji

is in sync with RHEL

owned by CentOS Project

is in sync with RHEL

is RHEL
CentOS Stream builds in sync with RHEL

done by RHEL Dev and QE

CentOS Stream
public

Red Hat Enterprise Linux
internal

sources

\[\text{c9s -gate} \rightarrow \text{?pass && ?pass} \rightarrow \text{c9s -candidate} \rightarrow \text{?pass} \rightarrow \text{c9s -pending}\]

\[\text{rhel-9 -gate} \rightarrow \text{?pass && ?pass} \rightarrow \text{rhel-9 -candidate} \rightarrow \text{?pass} \rightarrow \text{rhel-9 -pending}\]
Benefits

**Continuity:**
No unpredictable jumps, early access to what’s coming

**Openness:**
Collaborate, provide feedback, request features, send patches

**Flexibility:**
Choose how far upstream you’d like to go and how early you want to integrate

EPEL 9 opened early
CentOS Stream 10 and RHEL 10 feature development happens now in Fedora ELN

https://docs.fedoraproject.org/en-US/eln/
Thank you!

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See you at CentOS Dojo on June 17