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Red Hat Enterprise Linux 8 BETA: An early look at the new training preview course

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Overview

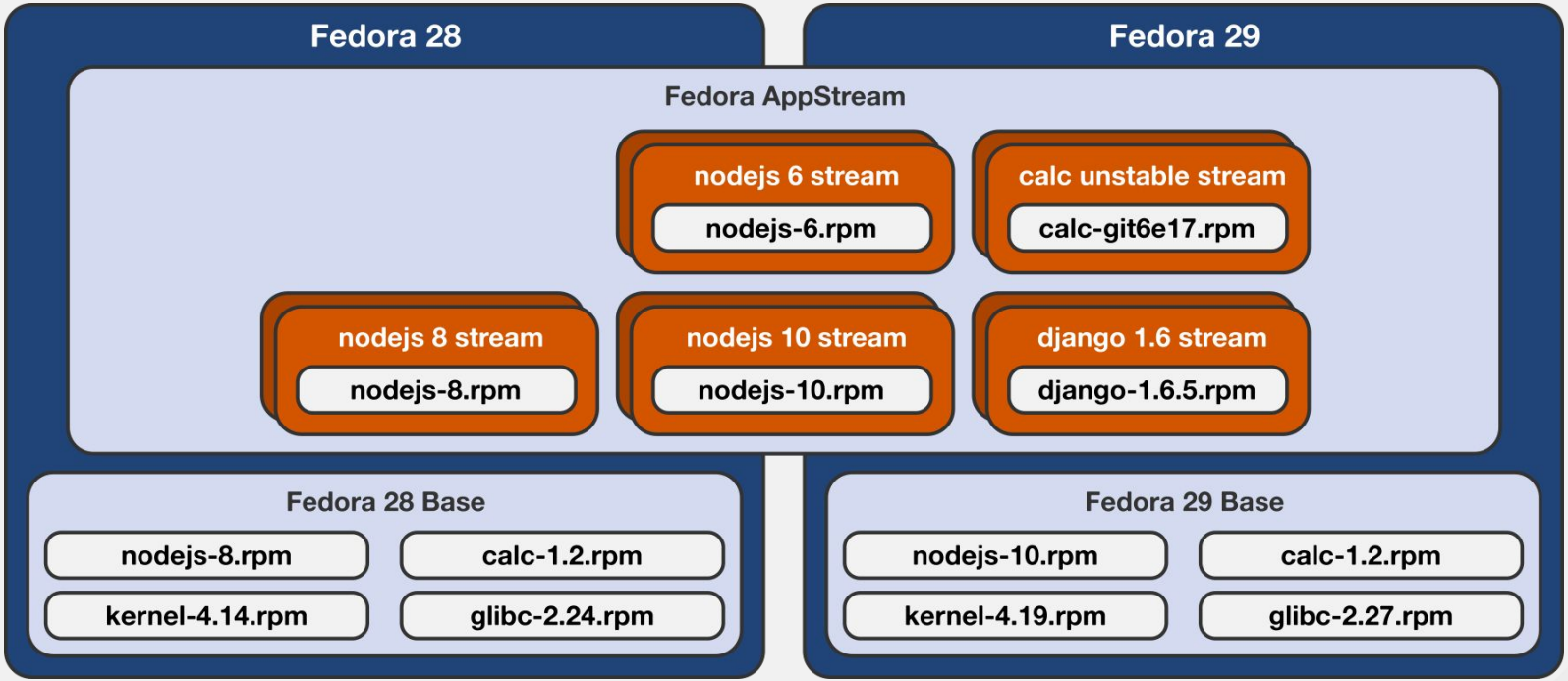
WHAT'S NEW IN RHEL 8?

- Kernel 4.18
  - 5-level page table
  - 128 PiB virtual address space
  - 512 GiB huge pages
  - 4 PiB physical RAM (theoretical, supported limit not defined yet)
- Python 3.6.x default
- BootLoaderSpec (BLS)
- Repository restructuring
- Nvdimm storage support
- Podman, Buildah and Skopeo for containers
- Image Builder (tech preview)
- System purpose
- Wayland
- Leapp
- Authselect
- Yum - modularity
- Cockpit enhancements

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8-beta/html/8.0_beta_release_notes/

WHAT'S NEW IN PACKAGE MANAGEMENT ?

APPLICATION STREAM (Modularity)



APPLICATION STREAM

Provides modularity to package management

- RHEL 8 content is distributed through the two main repositories: BaseOS and Application Stream (AppStream).
  - **BaseOS**
    The BaseOS repository provides the core set of the underlying OS content in the form of traditional RPM packages. Same lifecycle as RHEL 8
  - **Application Stream**
    The Application Stream repository provides content with varying life cycles as both modules and traditional packages.

```
# yum module list
# yum module list postgresql
# yum module info postgresql
# yum module info postgresql:9.6
# yum module info postgresql:9.6 -v
# yum module install postgresql:9.6
# yum module list --enabled
# /usr/bin/postgresql-setup --initdb
# systemctl start postgresql
# psql --version
```

APPLICATION STREAM VS SCL

Software Collections (SCL) uses a different method of packaging to allow for multiple versions of the same piece of software to be installed on one system by putting them into separate namespaced paths. Modularity on the other hand uses standard RPM packaging — so things are where you expect them to be — but you can only install one version at a time.

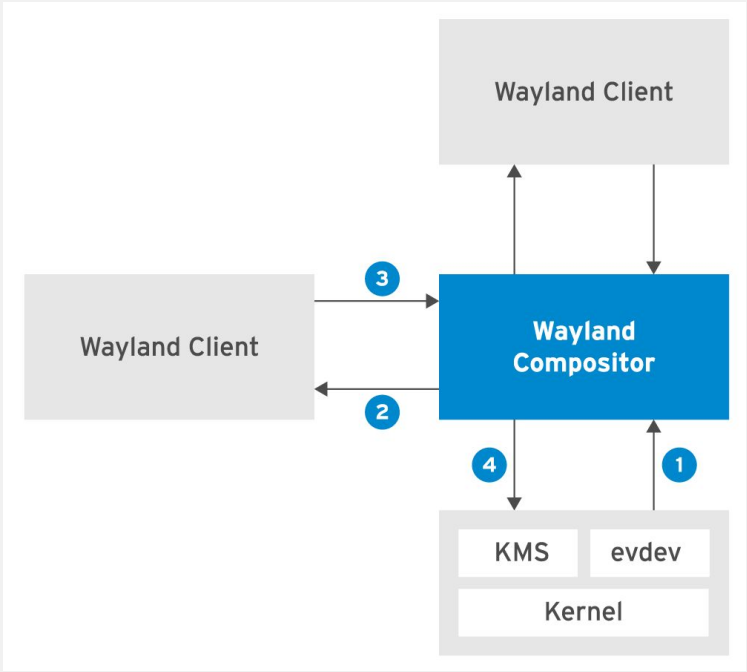
SCL has proven to be hard to maintain and hard to use (Special macros in spec files, package name mangling, running 'scl enable' in order to make them visible). The ability to install multiple versions in parallel has turned out not to be a common use case. The real benefit of SCL was the ability to choose a specific version of software — and that’s exactly what Modularity offers.

WAYLAND

WAYLAND

Wayland replaces Xorg in Gnome 3 as the default window system

- Faster performance:
  - simpler architecture
  - no legacy code
  - compositor/display server
  - rendering offloaded to the clients
- Provides compatibility through Xwayland
- No network transparency included
- Simple to revert to Xorg if necessary

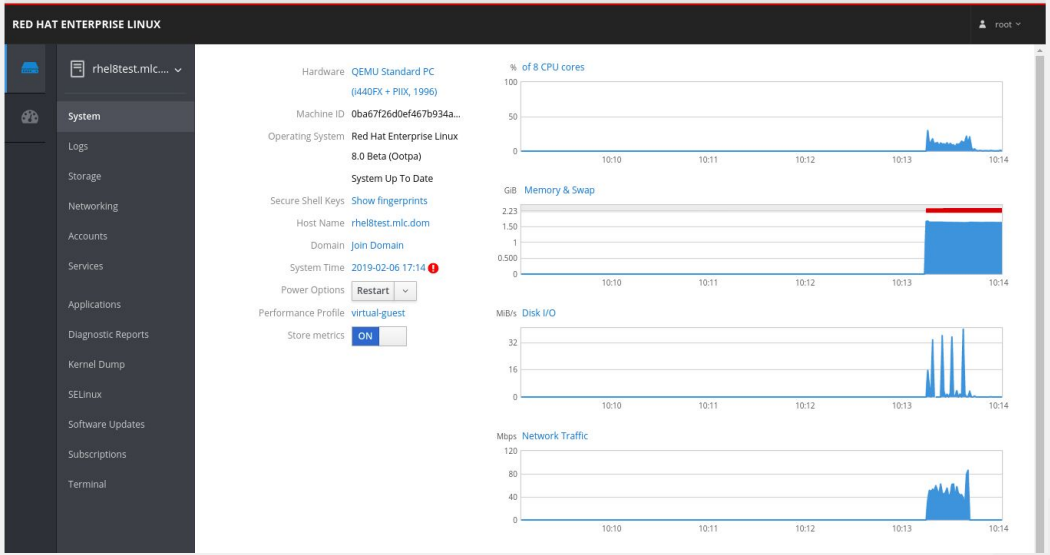


SYSTEM MANAGEMENT WITH COCKPIT

COCKPIT

Cockpit is an interactive server admin interface (https://cockpit-project.org/)

- Configure firewall rules and network interfaces
- Manage services and software
- Manage users
- Manage SELinux
- Access a terminal
- Build RHEL images
- Manage virtual machines
- ...

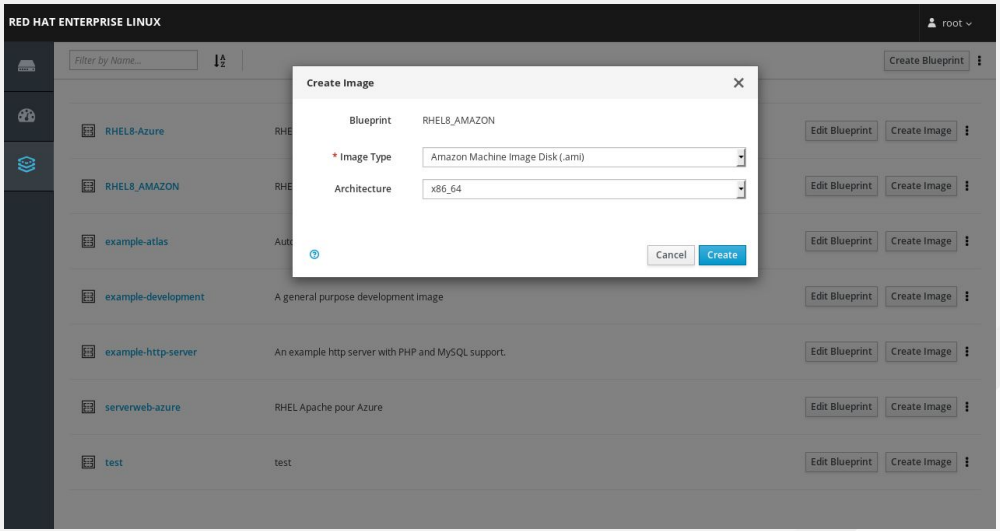


BUILD YOUR OWN RHEL IMAGES WITH IMAGE BUILDER

IMAGE BUILDER

https://weldr.io/

- Image Builder is a tool that enables users to create customized system images of Red Hat Enterprise Linux.
  - Amazon, Azure, .img, .iso, Openstack, qcow2, tar, and VMware
- Image Builder functionality can be accessed through a graphical user interface in Cockpit, or with a command line interface in the composer-cli tool



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CONTAINER TECHNOLOGIES

Where is Docker ?

- In RHEL 8 there is no longer a Docker daemon
- You can still run/build docker images with the help of:
  - Buildah
  - Podman
  - Skopeo
- These are now the default container tools in RHEL 8
- Install the container-tools yum module

https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8-beta/html/building_running_and_managing_containers/

buildah

https://github.com/containers/buildah

Build Open Container Initiative (OCI) and Docker images

- The buildah utility replaced docker build as the preferred, maintained, and supported container images build tool in Red Hat Enterprise Linux 8
- Images can be built in either the OCI image format or the traditional upstream docker image format
- No daemon !

```
# container=$(buildah from fedora)
# echo $container
# buildah run $container bash
# exit
# buildah run $container -- dnf -y install screenfetch
# buildah run $container screenfetch
```

SKOPEO

https://github.com/containers/skopeo

Inspect, copy, and sign container images

- Replaces docker push as the preferred, maintained and supported utility for moving container images between registries, and container engines
- Can inspect a repository on a container registry without needlessly pulling the image.
- Can sign and verify container images
- Can delete container images from a remote container registry
- No daemon so no root user permissions required

```
$ skopeo inspect docker://docker.io/fedora
$ mkdir fedora-29
$ skopeo copy docker://fedora:29 dir:fedora-29
$ tree fedora-29
fedora-24
├── 7c91a140e7a1025c3bc3aace4c80c0d9933ac4ee24b8630a6b0b5d8b9ce6b9d4.tar
├── f9873d530588316311ac1d3d15e95487b947f5d8b560e72bdd6eb73a7831b2c4.tar
└── manifest.json

0 directories, 3 files
```

podman

https://podman.io/

Run, manage, and debug containers

- The podman container engine replaced docker as the preferred, maintained, and supported container runtime of choice for Red Hat Enterprise Linux 8
- Podman provides a docker compatible command line experience enabling users to find, run, build, and share containers
- Podman uses Buildah and Skopeo as libraries for the build and push
- No daemon !

```
# podman run -t -p 8000:80 nginx  //then open a second terminal
# podman ps
# podman inspect -l | grep IPAddress\":
# curl http://<IP_address> // or with firefox
# podman logs --latest
# podman top <container_id>
# podman stop --latest
# podman ps -a
# podman rm --latest
```

RHEL8 Features for Experienced Administrators (RH354)

- **Theme/message** - What practicing Linux admins need to know on day one when they begin working with RHEL8
- **Length** - 3 days
- **Launch** - March - Pre GA
- **Availability:**
  - Online - RHLS Subscriptions
  - Classroom - check redhat.com for regional deliveries, also by private onsite
- **Core content**
  - New BaseOS/AppStream packaging and changes to software management as previewed by Fedora Modularity
  - Discussion of the RHEL 7 to RHEL 8 supported upgrade process
  - Introduction of nftables low-level firewall and interactions with firewalld and iptables
  - Changes caused by system Python 3 migration
  - Impact of Wayland display server versus its fallback to Xorg (used in RHEL 7)
  - Other general changes and “gotchas” (as they are identified)

DEMONSTRATIONS

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THANK YOU !

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