Lifecycles, Versions, and System Administration, Oh My!

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Developers want variety and new versions
Operators

want packages, auditability, lifecycle, support
Dev and Ops are very different yet they need to work together.
Isn't this just packaging?

That's what Linux distributions do.
Packaging makes software integrated, tested, updated, and easily installable.
Lifecycle brings an over-time stability to the diverse open source world.
Upstream lifecycle diversity

Library foo

Language runtime B

Language runtime A

Application v2

Library foo even better

Application v1

Library foo better

maintenance timeline
Linux distribution lifecycle

- Application v1
  - Language runtime A
  - Library foo
- Application v2
  - Language runtime B
  - Library foo better

maintenance timeline
Linux distribution lifecycle

Fedora 27

Fedora 28

maintenance timeline
Lifecycles of different Linux distributions

- **CentOS**
- **Fedora**
- **Arch Linux**

*maintenance timeline*
Sounds good for ops.
Packages, lifecycle, updates, transparency, ...
But it's monolithic.

Developers or existing apps might be limited.
Containers?
The magical happiness for everyone?
Containers are flexible and portable.
But containers are just flexible and portable. They won't magically fix bugs or security issues for you.
We need:

new versions and variety for developers
with the qualities required by operators.
Modularity separates the lifecycles of different pieces of a Linux distribution.
Linux distribution lifecycle

- Fedora 27
- Fedora 26

maintenance timeline
Fedora Modularity

Traditional releases before Modularity

Fedora 26
nodejs-6.rpm

Fedora 27
nodejs-8.rpm

Fedora 28
nodejs-8.rpm
nodejs-10.rpm
nodejs-6.rpm
Fedora Modularity
Fedora 28 with multiple versions

Fedora 26
- nodejs-6.rpm

Fedora 27
- nodejs-8.rpm

Fedora 28
- nodejs 6 stream
  - nodejs-6.rpm
- nodejs 8 stream
  - nodejs-8.rpm
- nodejs 10 stream
  - nodejs-10.rpm
Fedora Modularity
Multiple versions & independent lifecycles
Fedora Modularity
Multiple versions & independent lifecycles

- Fedora 27
  - nodejs-8.rpm

- Fedora 28
  - nodejs-6 stream
    - nodejs-6.rpm
  - nodejs-8 stream
    - nodejs-8.rpm
  - nodejs 10 stream
    - nodejs-10.rpm

- Fedora 29
  - nodejs-6 stream
    - nodejs-6.rpm
  - nodejs-8 stream
    - nodejs-8.rpm
  - nodejs 10 stream
    - nodejs-10.rpm
Packages are the core building blocks of Linux distributions.
Modules are logical groups of packages on independent lifecycles.
Defaults mean that you can choose a specific version only when you want to.
Updates will respect your choice and won’t automatically upgrade to a different stream.
Demo:
Managing modules in Fedora using DNF
Containers again
The true container benefits:

They run almost anywhere.

Compose + testing can be done up front.
3rd party container registries are handy, you just find a container and run it.

That's perfectly fine, isn't it? There's no risk or anything, right?
3rd party container registries are handy, you just find a container and run it. That's perfectly fine, isn't it? There's no risk or anything, right?

https://kromtech.com/blog/security-center/cryptojacking-invades-cloud-how-modern-containerization-trend-is-exploited-by-attackers
“… By pushing malicious images to a Docker Hub registry and pulling it from the victim’s system, hackers were able to mine 544.74 Monero, which is equal to $90000…”
Back to the true container benefits:

They run almost anywhere.

Compose + testing can be done up front.
Build custom containers
with Linux distributions.

Leveraging both:
the Linux distributions benefits (packaging, lifecycle)
and container benefits (portability, images).
What about the underlying OS when my apps run in containers? Should I care?
You definitely need to care about the OS for security, performance, and new hardware compatibility.

But it doesn't need to be your pet.
With apps in containers
the OS can be immutable.
Traditional upgrade
from orange to green.
Traditional upgrade from orange to green.
rpm-ostree upgrade
from **orange** to **green**.
rpm-ostree upgrade

from orange to green.
rpm-ostree upgrade from orange to green.
Fearless upgrades for your server and workstation.
We talked about...
Dev and Ops are very different
yet they need to work together
Linux distributions

Packaging & Lifecycle
Immutable OS
for your server and workstation.
Come talk to us!
We have demos, stickers, summer hats, and brilliant people.
Or search for "fedora modularity", "fedora coreos", and "fedora silverblue".