DDOS UserGroup

Immutable Linux

What if you cannot write to /usr

At 15.12.2021 by Daniel Schier

Agenda

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- Introduction
- Immutability
- Examples
  - CoreOS (Red Hat/Fedora)
  - microOS (Suse Linux)
  - k3os (Rancher/Suse Linux)
  - NixOS
- Conclusion

Speaker

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Daniel Schier

Founder of while-true-do.io and DDOSUG, with a huge heart for Open Source.

Making Open Source more accessible is my passion.

And... I like penguins, cats and cookies.

Immutability

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- /usr Read-Only?
- /etc often not
- Very FS dependent
- More secure?
- More stable?
- More solid?
- Build > Configure

Examples

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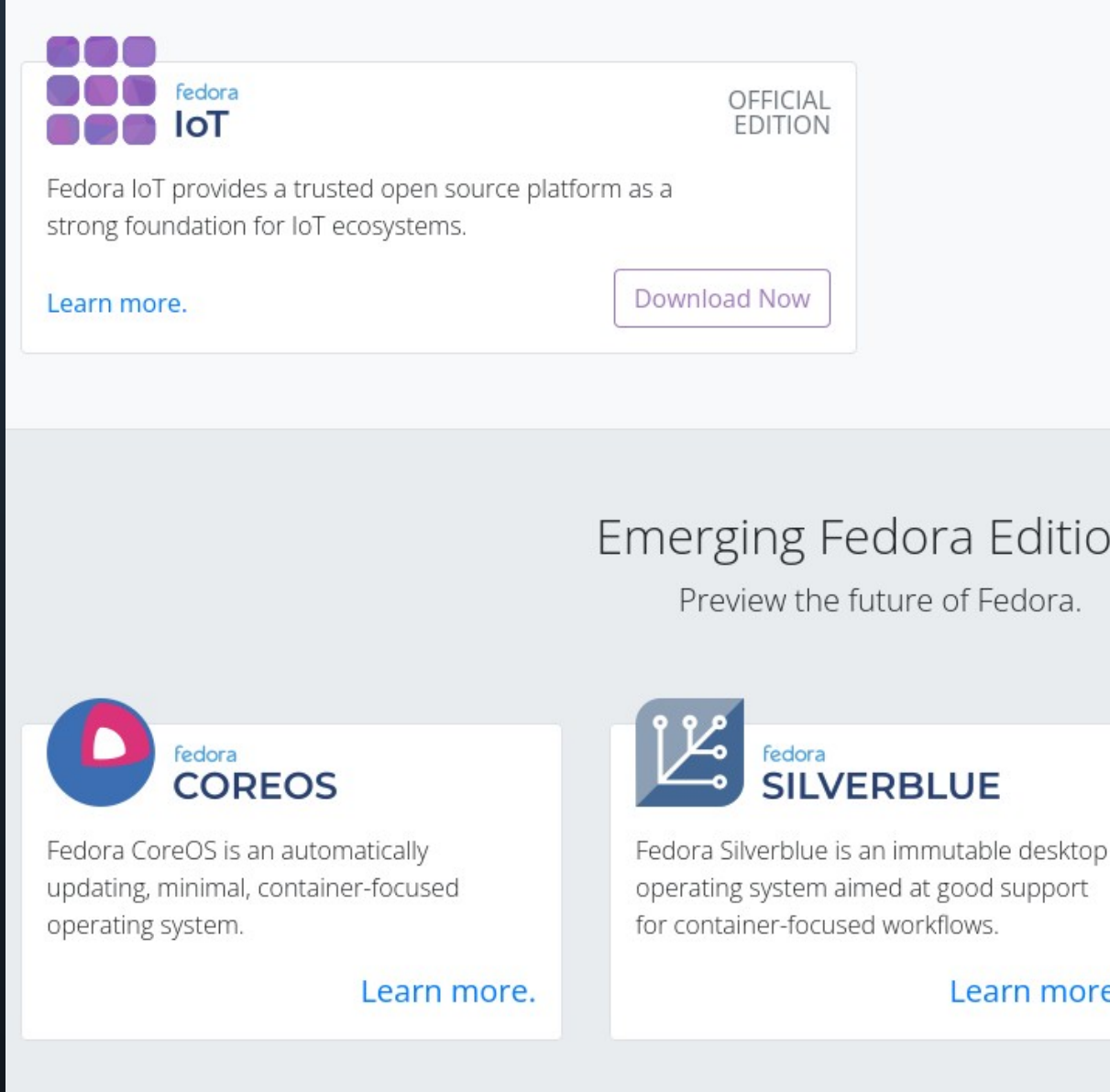
- CoreOS
- microOS
- k3os
- NixOS

CoreOS

- Fedora
  - IoT, CoreOS, Silverblue, Kinoite
- RHEL
  - CoreOS
- OSTree based
- Deploy, Pin, Rollback
- Ignition for unattended installations
- Mutable and Immutable parts
- Podman and Toolbx (and Docker)

https://getfedora.org/coreos?stream=stable



microOS

- Suse only
- Btrfs based
- Deploy, snapshot, rollback
- Pretty default Suse Linux
- Combustion, ignition and cloud-init for initial deployment
- Built with Kubic in mind (Kubernetes distribution)

https://microos.opensuse.org/

https://kubic.opensuse.org/

openSUSE Kubic

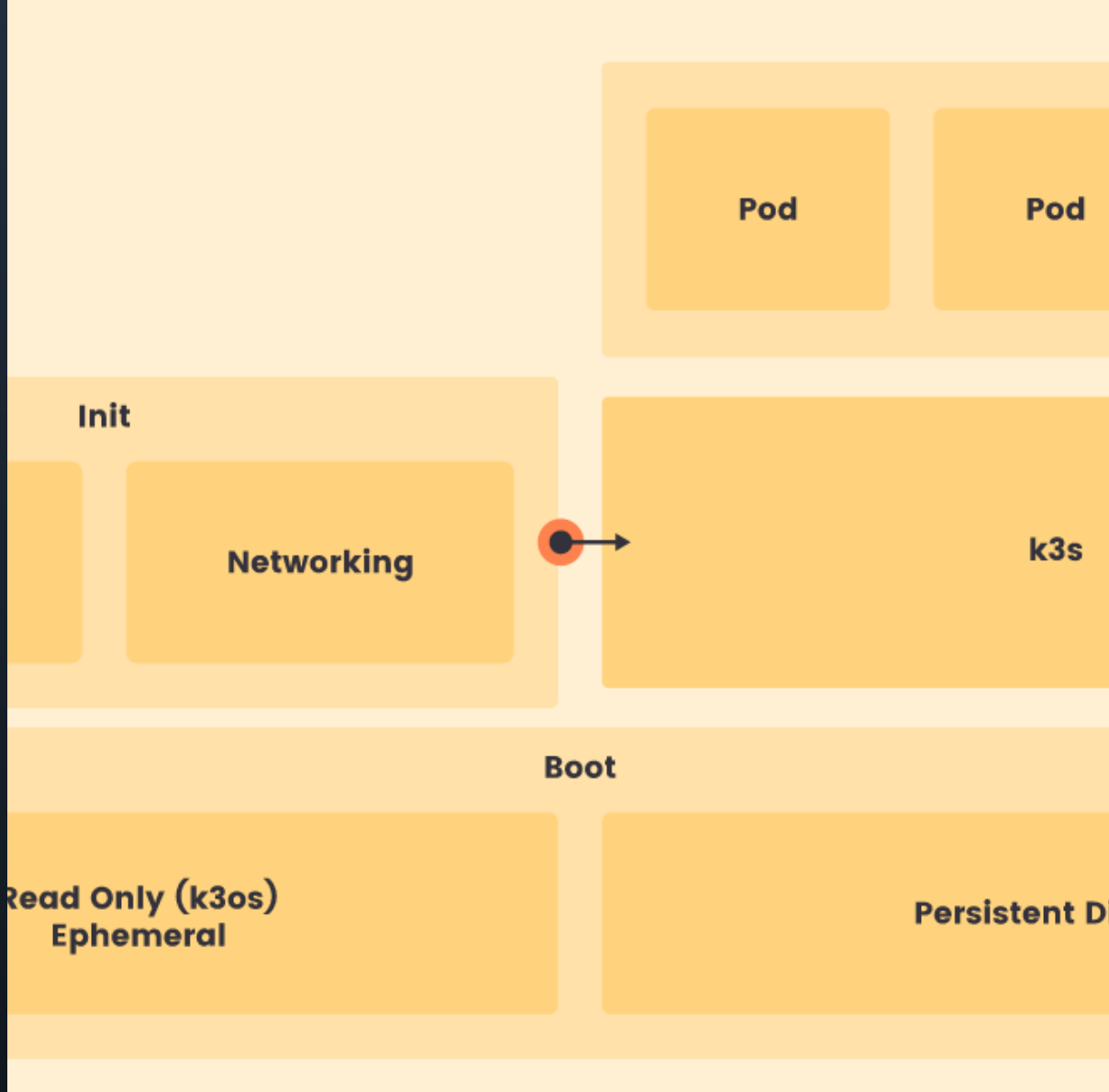
Certified Kubernetes distribution & container-related technologies built by the openSUSE community

k3os

- Made by Rancher/Suse
- Built for k3s (Kubernetes distribution)
- k3s is PID 1
- Based on Alpine + Ubuntu Kernel
- No traditional package manager
- Kubernetes is the frontend
- Configuration and updates done via CRD

https://k3os.io/

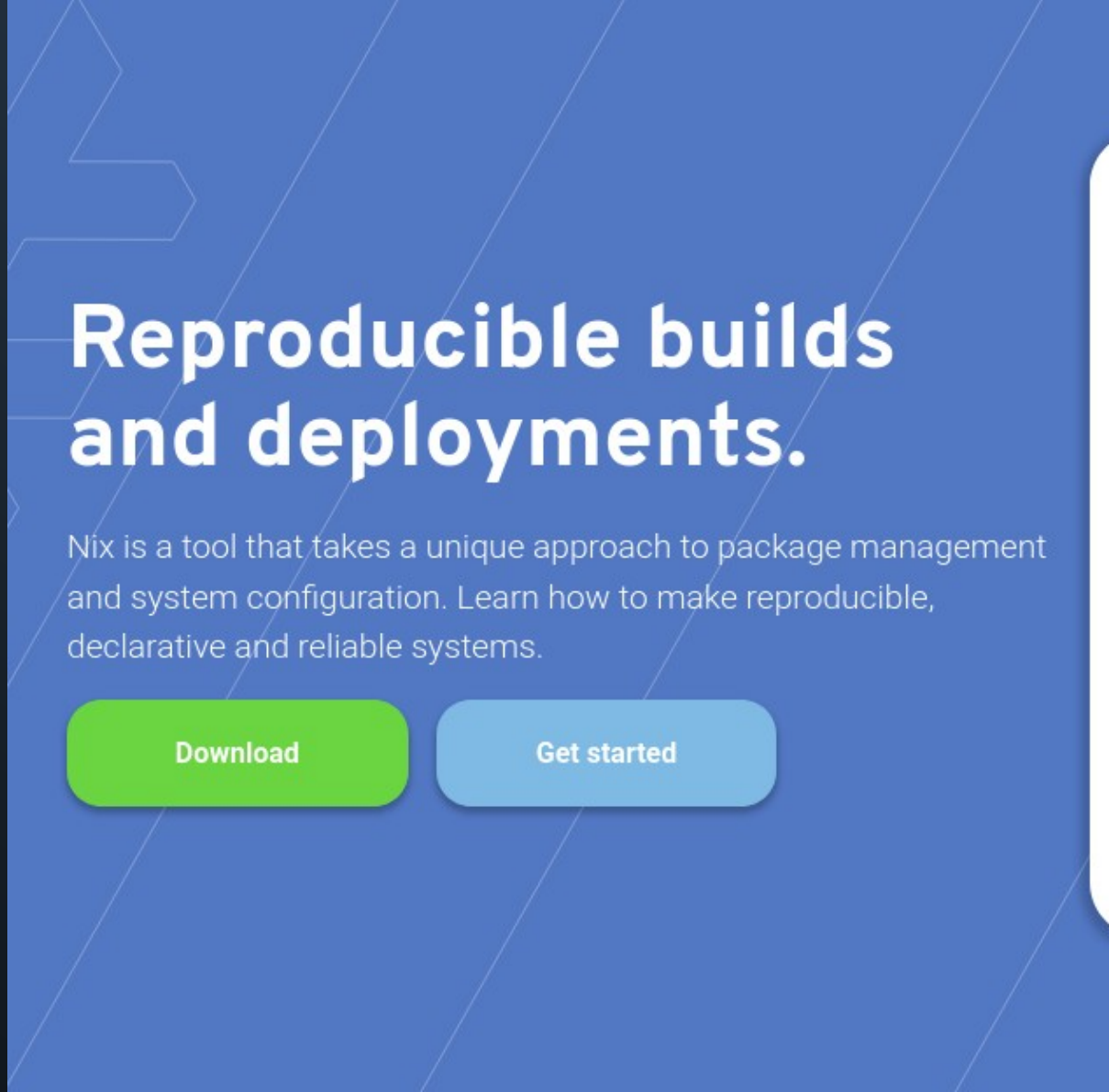
https://k3s.io/



NixOS

- Independent
- Declarative via JSON config
- Nix+NixShell → NixOS
- Designed for container/cloud/ISO abstraction
- Every (manual) installation is a container, but somewhat hidden
- You can start on your own machine

https://nixos.org/



Conclusion

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- Tested all of them
- Worked with 3 of them (4 tbd)

- Solving some issues
- Applications not ready
- Some hoops and loops here and there
- CoreOS seems very mature, followed by k3s
- None of them are ready:
  - “critical production workload”
  - being used by general Linux operators
- All of them
  - Very cloud and container focussed
  - Different ideas with the same goal

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The future of Linux is immutable, but my answers and opinions not. Please don’t hesitate :)