fedora

10 YEARS

Future of distributions

Speaker:
Jiří Eischmann
Template by:
William Moreno Reyes

Agenda:

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- Traditional model
- New requirements for distributions
- New trends in software distribution
- Fedora.NEXT

New Requirements

- There are deployments with thousands of servers.
- The industry slowly moving to cloud architecture.
- One size does not fit all.
- Development cycles are shorter.

New Requirements

- Scalability (large deployments easily manageable)
- Flexibility (different versions of software, faster release cycle)
- Light weight (small core system with fast boot)

Packaging System

- Designed 20 years ago.
- Push (back then) vs pull (now) inclusion of software.
- High granularity.
- The whole repository as one functional system (no clear boundaries between the system and applications).
- Dynamic linking.

Shortcomings

- Not ideal for having different versions of the same software.
- Problematic rollback.
- Isolation of software.
- Too hard barriers to entry for additional software.

Software Collections

- Several versions of the same software in the same system.
- Separated from the system files, located in /opt
- /opt/provider/application-version
- yum install ruby193
- scl enable ruby193 'ruby -v'

New Trends?

Containers!

Containers!

Containers!

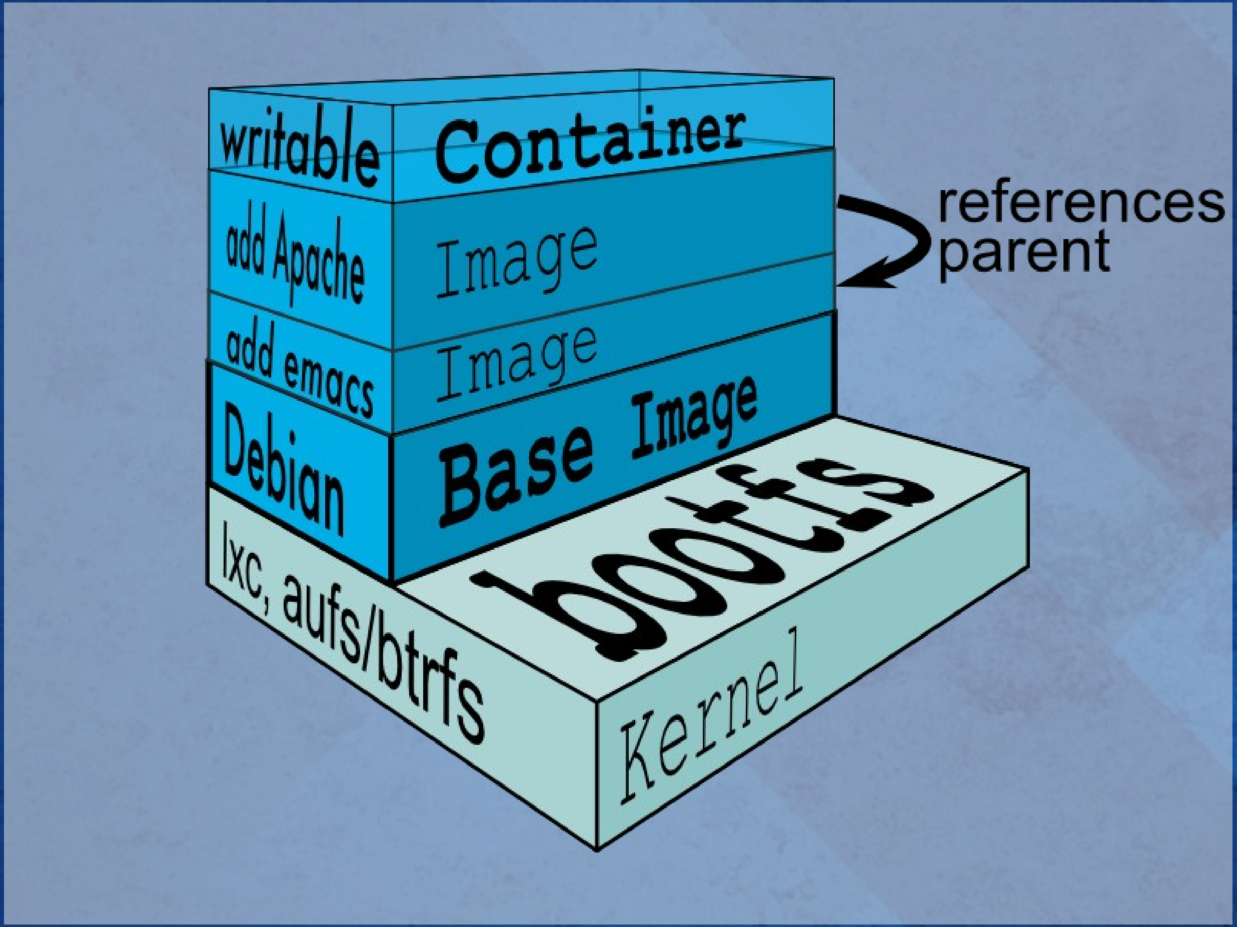
Containers

- Sandboxing - isolation from the rest of the system.
- Very small overhead compared to virtualization.
- Indepedent on other software (yes, bundling)
- You can limit resources.
- Better testa-bil-i-ty and re-pro-ducibil-i-ty.
- Have been with us for some time, but they're finally getting the necessary tooling for “applificantion”.

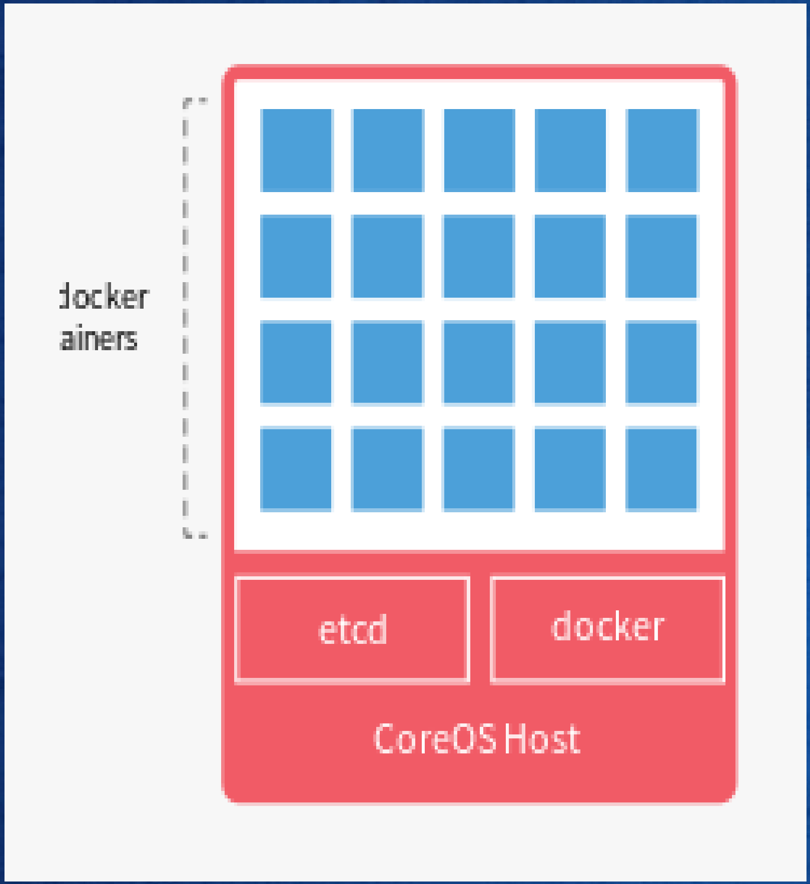
Docker

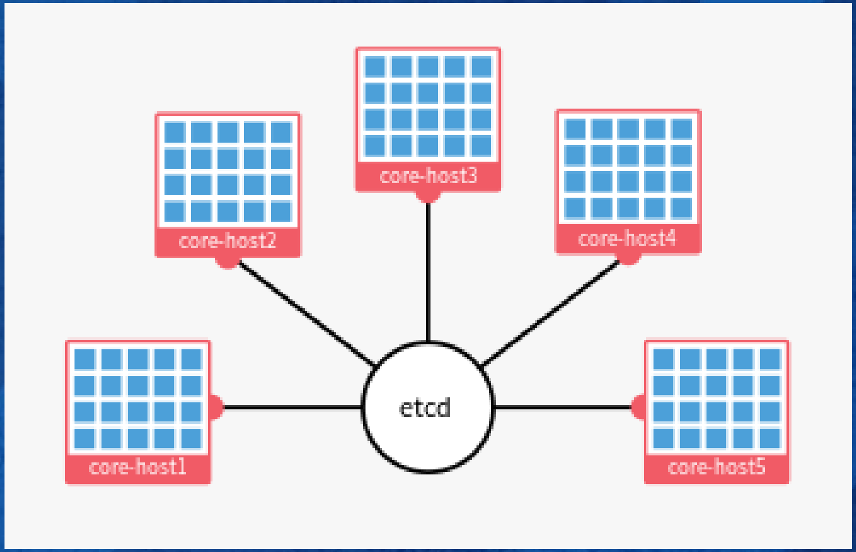
- Utilizes LXC and cgroups.
- High-level API.
- Layers using aufs/device mapper.
- Integrated with many projects (OpenStack, Puppet,...).
- Runs on virtually any modern Linux system (many officially supported distributions).
- Sharing images via repositories.
- De facto a standard for containers nowadays.

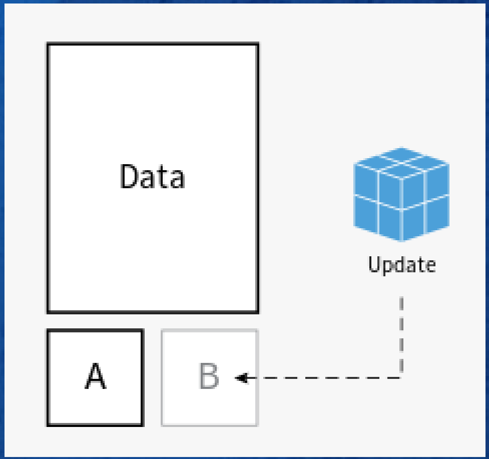
Docker Layers



CoreOS


docker
ainers
etcd
docker
CoreOS Host


core-host3
core-host2
core-host4
etcd
core-host1
core-host5


Data
Update
A
B

Systemd-nspawn

- Started as a debugging tool for systemd.
- “chroot on steroids”:
  - Can communicate with the host system via IPC (DBus).
  - Socket activation.
  - Complete virtualization of process and directory tree.
- Unlike LXC and like chroot it just works.

```
# yum -y --releasever=20 --nogpg --installroot=/srv/mycontainer --disablerepo='*'
--enablerepo=fedora install systemd passwd yum fedora-release vim-minimal
```

Linux Apps

- Standard sandboxed container for distributing Linux desktop apps.
- Distributed in a single file.
- Most likely will have a similar design as systemd-nspawn.
- Waiting for kdbus.
- Wayland-aware.

OSTree

- a tool for managing bootable, immutable, versioned filesystem trees.
- Something between a package manager and a tool for managing disk images.
- Using chroot and hard links.
- Atomic upgrades and rollback.
- Originally developed for GNOMEContinuous.

Fedora.NEXT

- Post-F20 future for Fedora.
- Three different products: Cloud, Server, Workstation.
- Sharing the same BaseOS.
- More distribution channels:
  - Copr for personal repositories.
  - Fedora Ugly for packages that don't meet the Fedora standards yet.
  - LinuxApps, Docker, Software Collections.

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Any question?

Jiri Eischmann

@ jiri@eishcmnann

facebook.com/sesivany

@sesivany

jiri@eischmann.cz

blog.eischmann.cz

Dont need to fill all, just a idea, delete icons if you dont use it;)