CONTAINERIZING FOREMAN DEPLOYMENTS

TAKE #42

$ whoami

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Debian Developer

♥ FOSS ♥

♥ automation ♥

- 2009: Foreman gets created
- 2013: Docker gets created
- 2019: Ohad adds a `Dockerfile` to `foreman.git`
- 2025: It's still not possible to run Foreman as a container in production

CLASSICAL FOREMAN DEPLOYMENT

- RPM and DEB packages
- orchestrated by Installer/Puppet
- users have lots of control (OS, plugins, etc)

EXISTING `Dockerfile`

- built from source
- no orchestration
- no plugins
- no control

EVERYONE WANTS KUBERNETES

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or at least Podman

2024: THE RESEARCH

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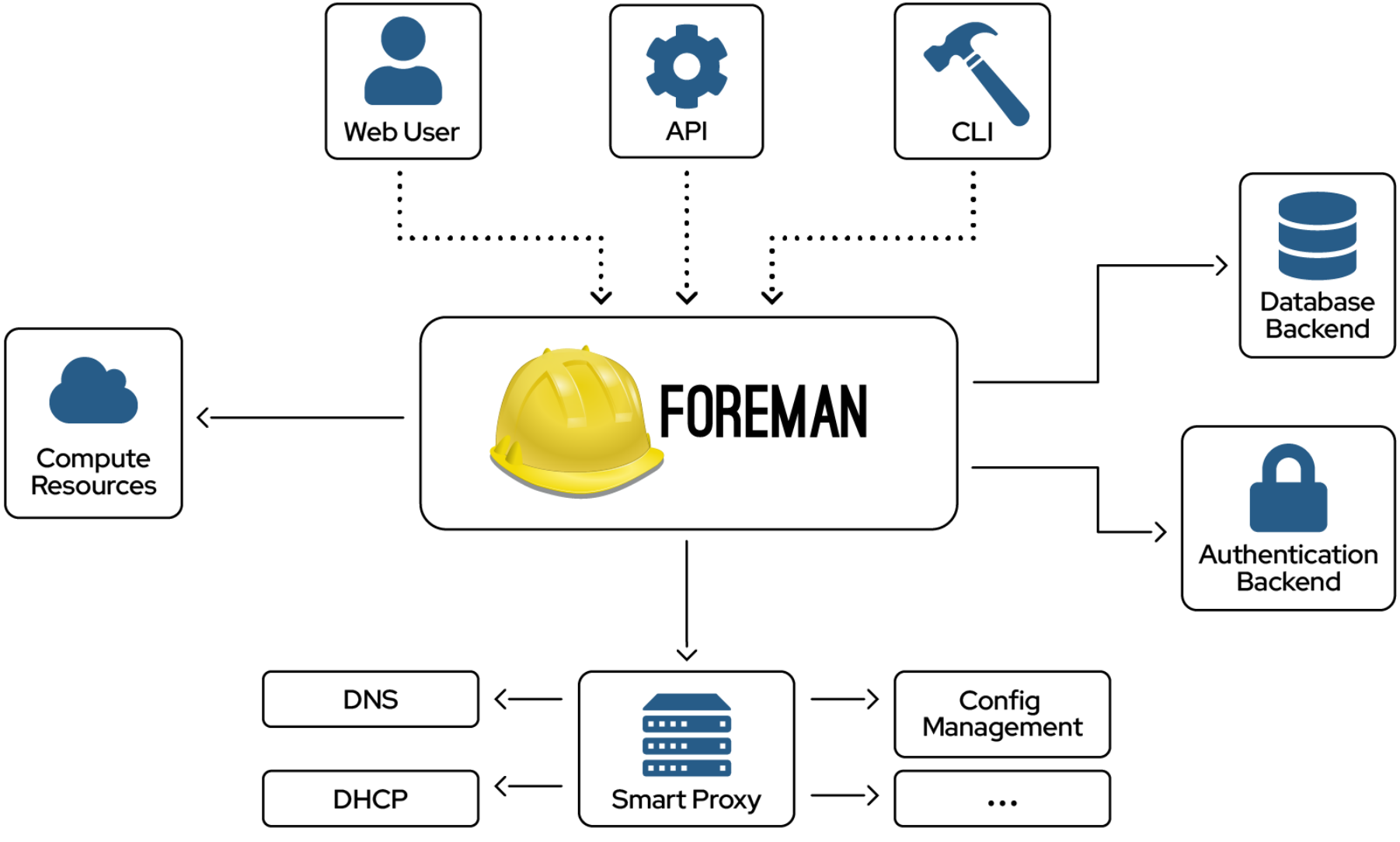
- let's throw *everything* away and start fresh
- maybe keep (RPM) packages?
- make it work with Podman, Kubernetes later

WHY PODMAN?

- We still need "one VM all services" deployment
- Podman (since 5.0) has very good systemd integration
- Can use Kubernetes YAML as input

WHICH SERVICES?



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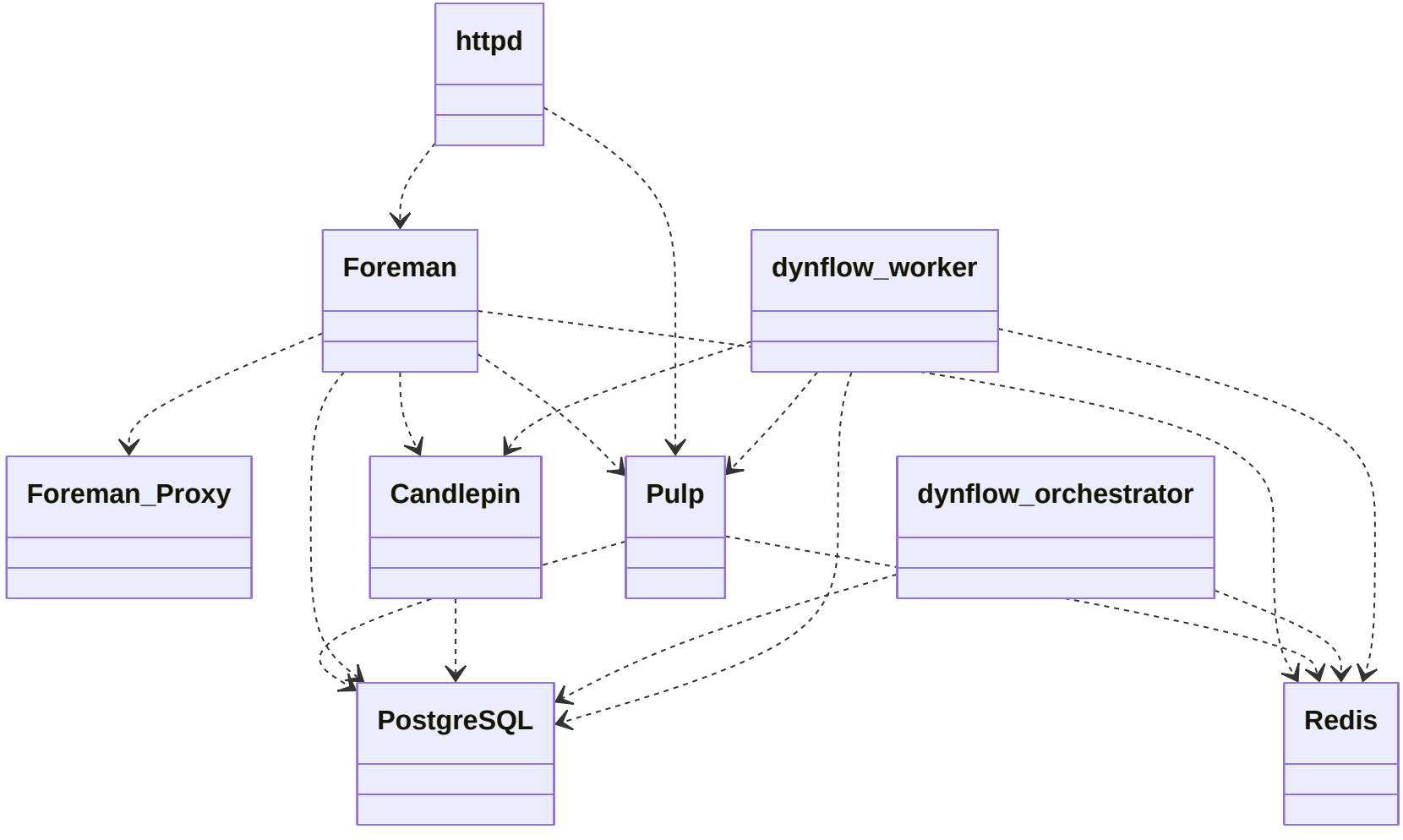

CANDLEPIN CONTAINER

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2 RUN dnf -y install candlepin
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HostName=quadlet.example.com
Image=quay.io/ehelms/candlepin:4.4.14
Network=host
Secret=candlepin-ca-cert,
       target=/etc/candlepin/certs/candlepin-ca.crt,
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CANDLEPIN CONTAINER

```
# systemctl status candlepin
● candlepin.service
     Loaded: loaded
             (/etc/containers/systemd/candlepin.container;
             generated)
     Active: active (running)
   Main PID: 1330 (conmon)
     Memory: 975.1M
        CPU: 19.567s
     CGroup: /system.slice/candlepin.service
             ├─libpod-payload-ef42219c81f60b6287df9caff
             │ └─1346 /usr/lib/jvm/jre-17/bin/java …
             └─runtime
               └─1330 /usr/bin/conmon …
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FOREMAN CONTAINER

```
FROM quay.io/centos/centos:stream9

RUN dnf install -y foreman foreman-postgresql\
    foreman-service foreman-redis foreman-dynflow-sidekiq

ARG FOREMAN_PLUGINS="foreman-tasks\
                     foreman_remote_execution\
                     katello"

RUN for PLUGIN in ${FOREMAN_PLUGINS}; do … ; done

CMD /usr/share/foreman/bin/rails db:migrate &&\
    /usr/share/foreman/bin/rails db:seed &&\
    /usr/share/foreman/bin/rails server -e production
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Image=quay.io/evgeni/foreman-rpm:nightly
Network=host
Secret=foreman-database-url,type=env,target=DATABASE_URL
Secret=foreman-settings-yaml,type=mount,
       target=/etc/foreman/settings.yaml
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Secret=foreman-client-cert,type=mount,
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DYNFLOW CONTAINERS

```
# cat /etc/containers/systemd/dynflow-sidekiq@.container
[Container]
ContainerName=dynflow-sidekiq-%i
HostName=quadlet.example.com
Image=quay.io/evgeni/foreman-rpm:nightly
Network=host
Secret=…
Exec=/usr/libexec/foreman/sidekiq-selinux -e production \
     -r /usr/share/foreman/extras/dynflow-sidekiq.rb \
     -C /etc/foreman/dynflow/%i.yml
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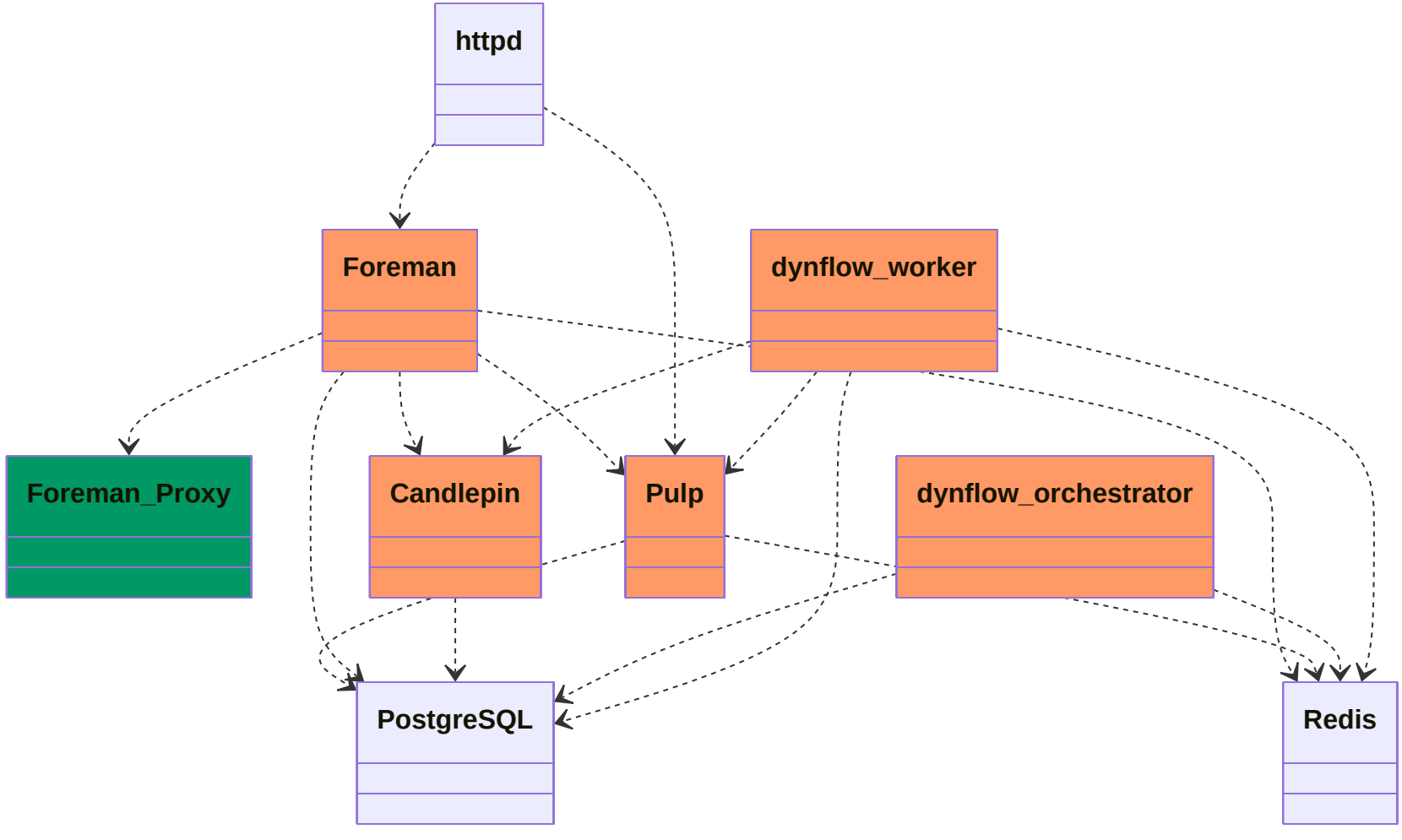
PULP CONTAINERS

- Built by the Pulp Project!
- All-in-One (incl PostgreSQL and Redis)
- API / Content / Worker

WHICH CONTAINERS?



ARE WE THERE YET?

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No.

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No. But we know which questions we need to answer.

INSTALLATION / CONFIGURATION

- our research used Ansible
- our current Installer is Puppet
- is this a chance to simplify?

MIGRATIONS / UPGRADES

- existing setups will require migration
- the installer decision will influence this

LOGGING

- Applications log to `/var/log`, but we don't mount that
- stdout/stderr is correctly collected by systemd

POSTGRESQL

- Should we move PostgreSQL into a container?
- How will we handle PostgreSQL upgrades?

HTTP INGRESS

- Today we use Apache httpd from the host
- Inherits crypto policies from the host
- Inherits Kerberos setup from the host

PACKAGING

- we're using RPM packages as the base for the containers
- the containers can run on Debian/Ubuntu
- containers *can* be build from source

INTEGRATION

- Foreman uses the Foreman Proxy to integrate with services
- We avoided that part in our research
- We'll also probably avoid it for the first real deployment

DEVELOPMENT SETUP

- "quickly apply this patch" doesn't work anymore
- neither does `bundle exec rails`
- we need to get dev and prod deployments closer together

YOU

- Pretty sure we didn't find all the questions
- There is an RFC
- We're also eager to hear ideas!

LINKS

- podman-systemd
- foreman-quadlet
- RFC: Foreman Production Installation via Containers and Podman Quadlets

THANKS!

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