

# To Foreman 2.0 and Beyond

An Architecture Perspective

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# \$ id

- Ewoud Kohl van Wijngaarden
- Open source enthusiast
- Senior Software Engineer at Red Hat
  - Platform Team
  - Installer maintainer
- Mostly upstream

# Foreman 2.0

- Dynflow based on Sidekiq and Redis
- Ruby 2.5+ for all projects (except the installer)
- DB migration and seeding changes
- Only PostgreSQL
- Update to PostgreSQL 12 on EL7
- IPv6\*

# What didn't make it?

- EL8 server support
- Replacing Passenger with Puma

# Foreman Architecture

- Foreman
- Foreman Proxy



# Foreman

- Ruby on Rails application
  - Many plugins available
- Dynflow: async tasks via Sidekiq
- PostgreSQL database
- Python websockify process for VNC

# Authentication

- Basic HTTP
- OAuth
- TLS client certificates
- Personal Access Tokens
- External via Apache (Kerberos, OIDC, ...)



# Minimal deployment

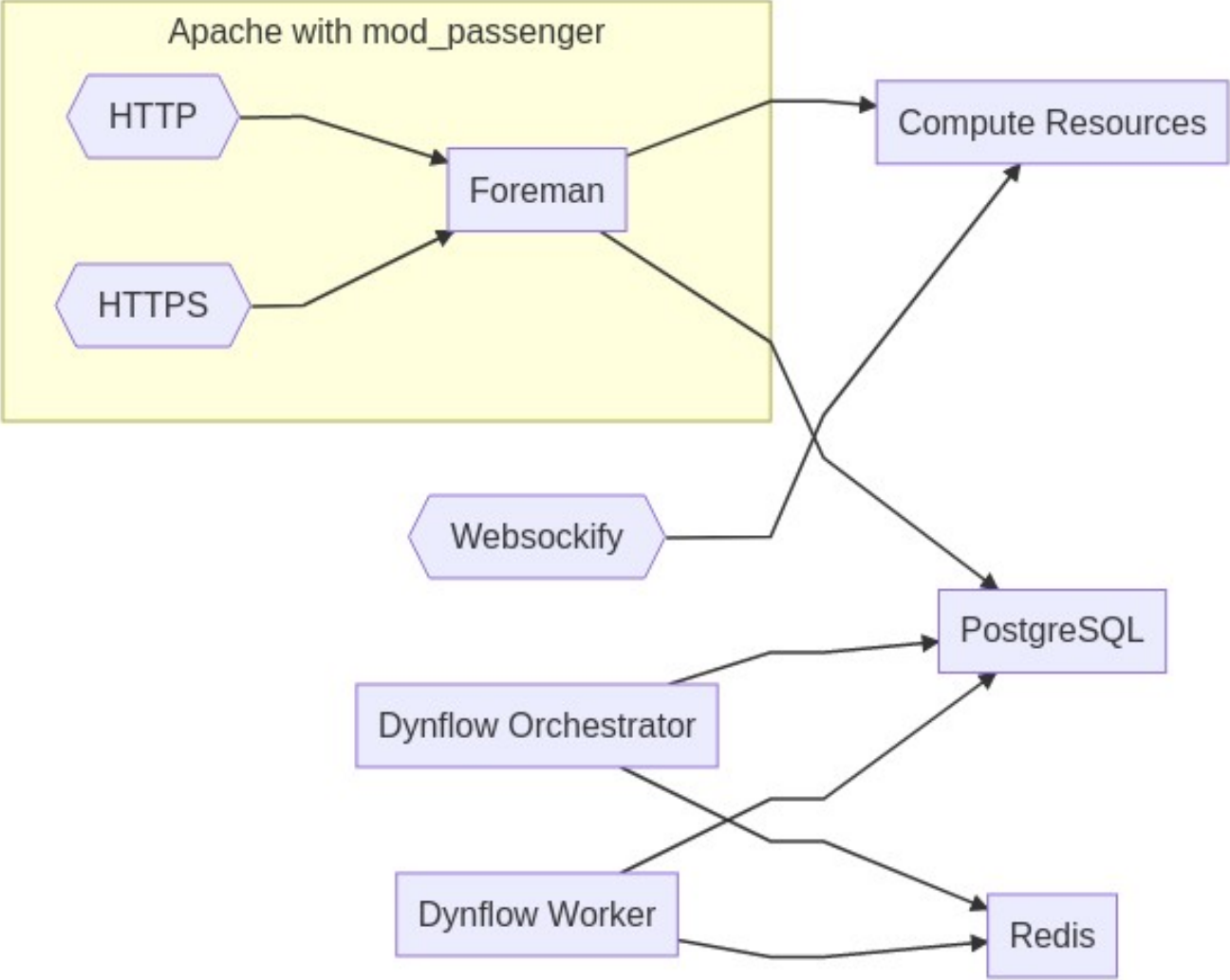
- Apache with mod\_passenger
- PostgreSQL

# Adding Dynflow

- Dynflow daemons
  - `dynflow-sidekiq@orchestrator`
  - `dynflow-sidekiq@worker`
- Redis

# Endpoints

- HTTPS port 443
- HTTP port 80
- HTTPS ports 5910-5930 (VNC proxy)



# Foreman Proxy

- Sinatra (Ruby) application
- Very modular design
- Various modules are pluggable with providers
- Functionality discovery using features API

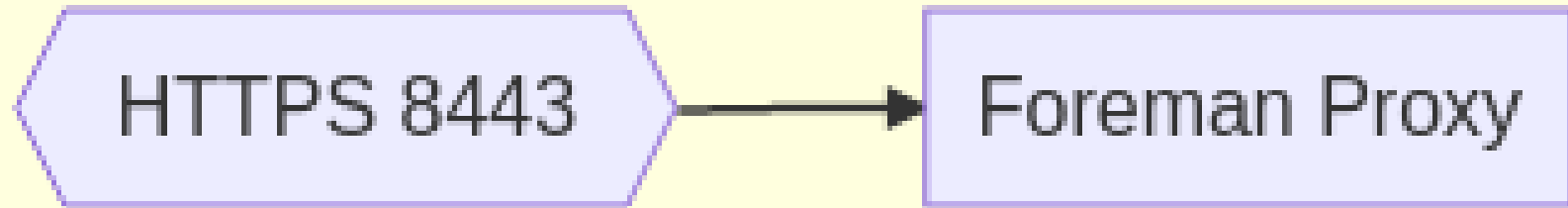
# Built-in modules

- BMC
- DHCP (ISC, libvirt and native MS providers)
- DNS (dnscmd, libvirt and nsupdate providers)
- Facts (used only for discovery)
- HTTPBoot
- Logs
- Puppet
- Puppet CA
- Realm (FreeIPA provider)
- Templates
- TFTP

# Endpoints

- HTTPS port 8443
- HTTP port 8000 (optional)
- Each module on HTTPS/HTTP/both

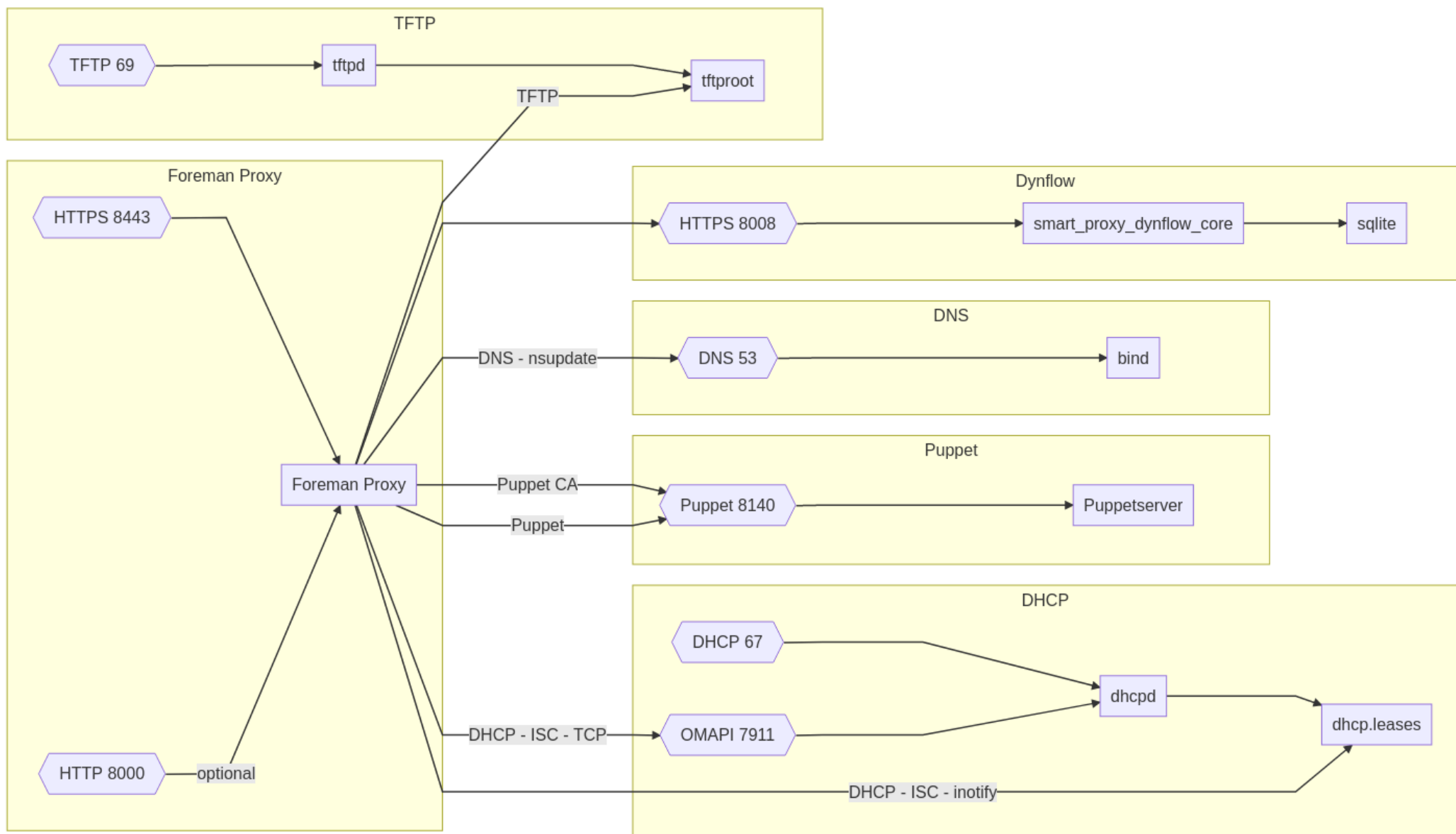
## Foreman Proxy



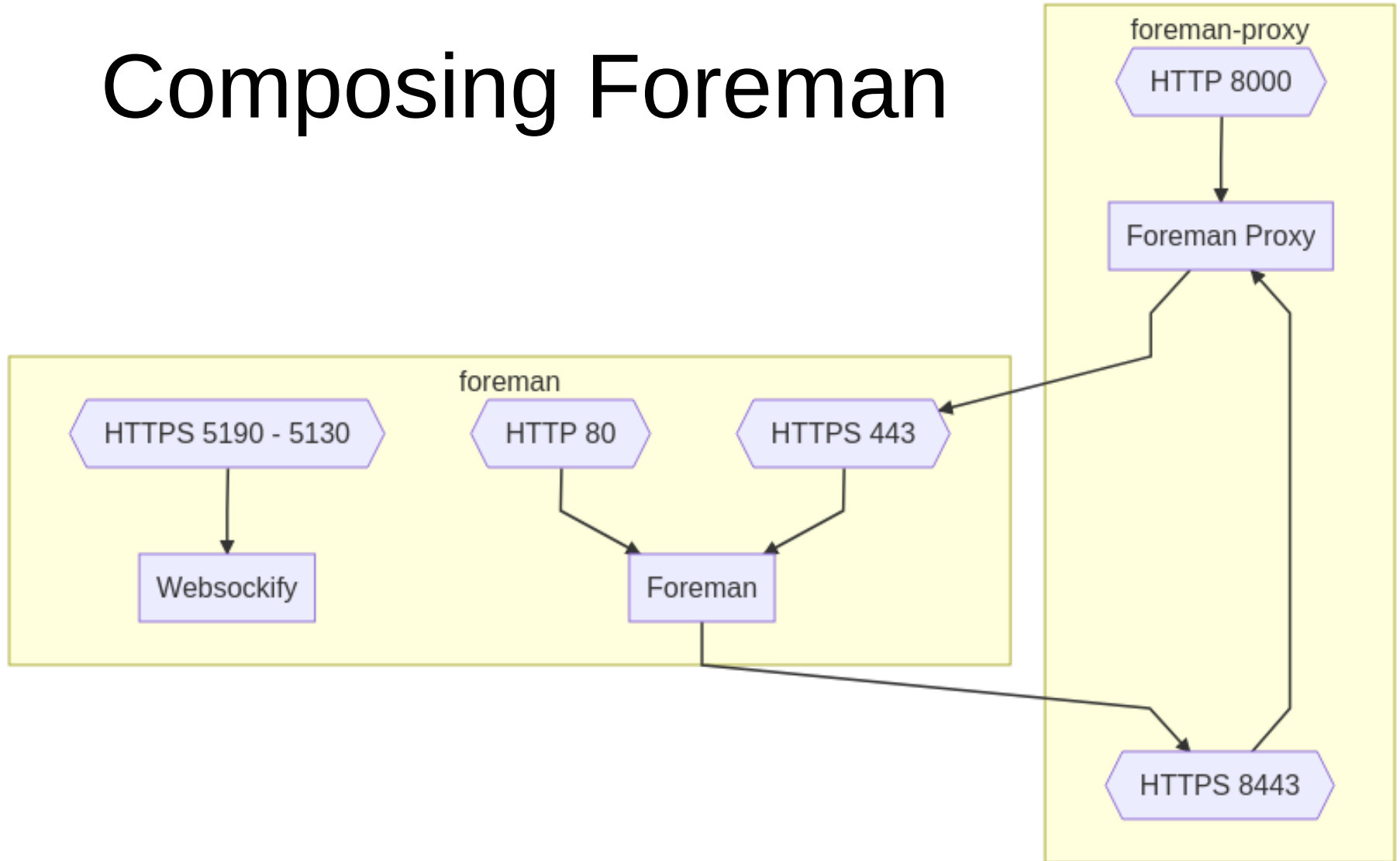


# Adding Dynflow

- Used by plugins such as Remote Execution
- RPM-based: Standalone process on HTTPS 8008
- Deb-based: In process
- In memory SQLite database
- RFC open to redesign this

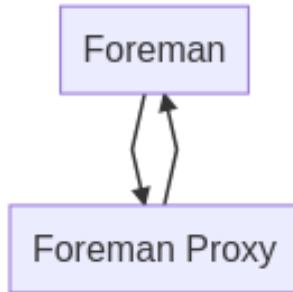


# Composing Foreman



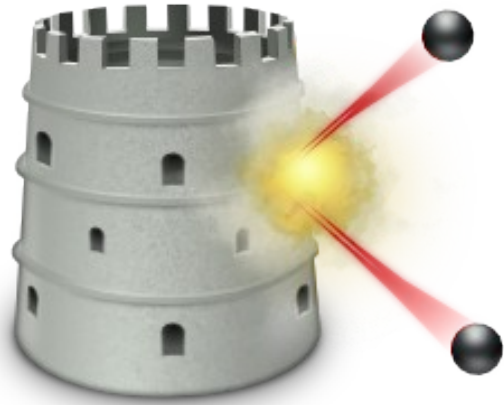


# Simplified





# Building Katello



# Current release: 3.14

- Foreman plugin
- Foreman Proxy
- Candlepin
- Pulp 2
- Qpid



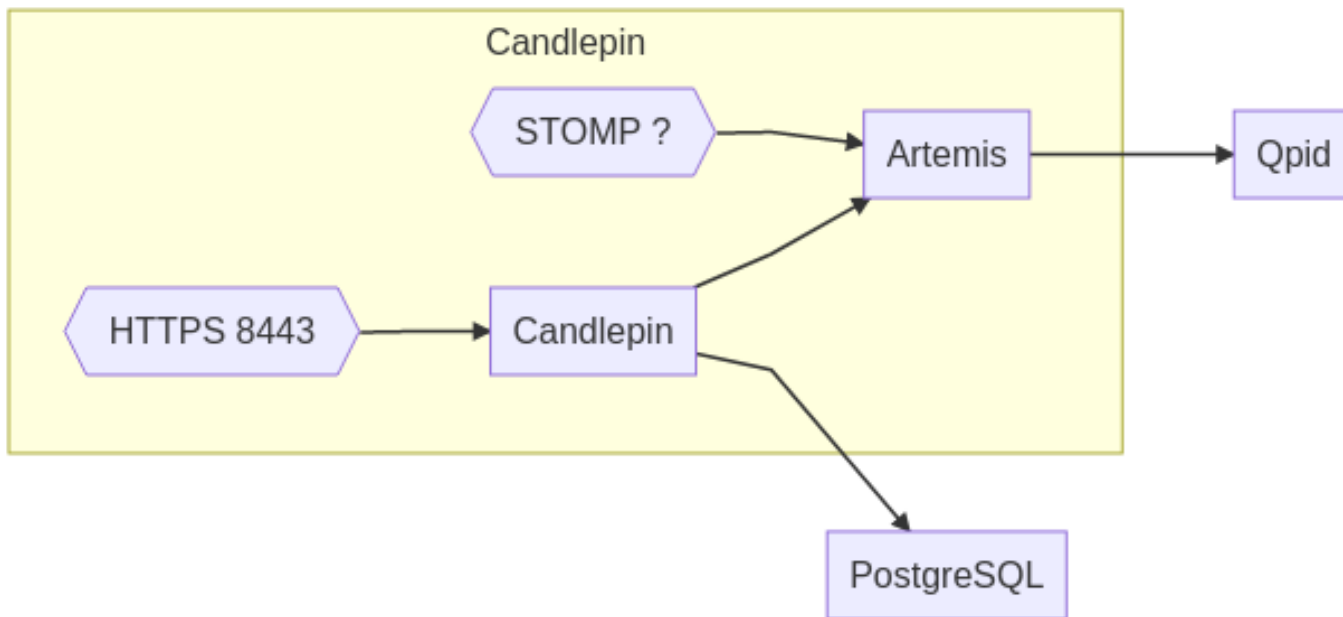


# Foreman Proxy Content

- AKA Capsule
- Foreman Proxy on port 9090
- Reverse Proxy to Foreman
- Pulp

# Candlepin

- Java application on Tomcat
- PostgreSQL database
- Listens on HTTPS port 8443
- Sends events to a message bus (Qpid)
- Events consumed by Katello



# Pulp 2

- Python
- Various services
  - pulp\_celerybeat
  - pulp\_resource\_manager
  - pulp\_streamer
  - pulp\_workers + pulp\_worker-0..n
- Served via Apache with mod\_wsgi
  - Repo Auth
  - Streamer Auth
- MongoDB
- Squid
- Crane container registry
  - Flask (Python) application
  - HTTPS port 5000
  - Apache mod\_wsgi
- agents via Qpid

404 Architecture Not Found



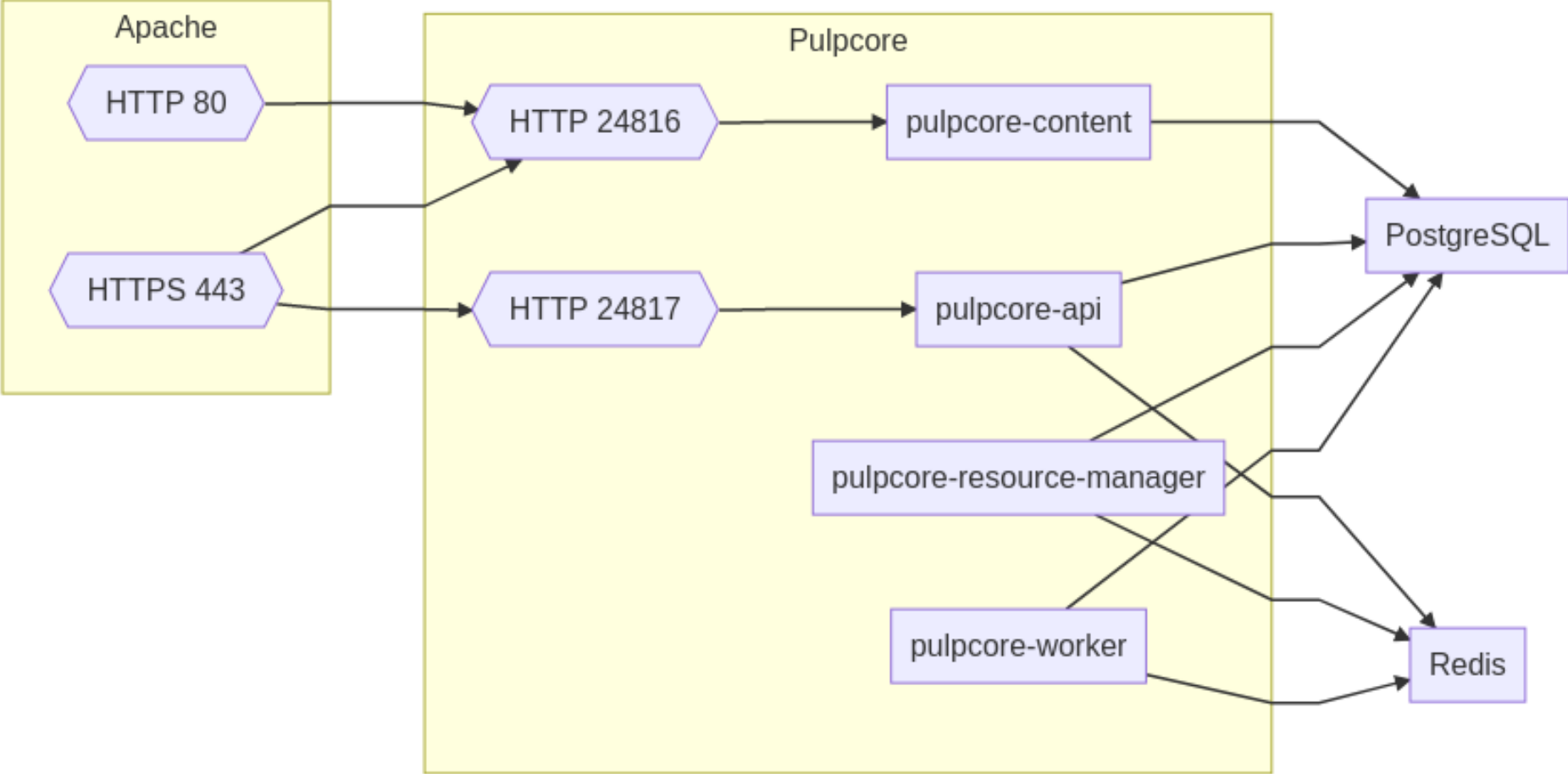
# Moving forward: 3.15

- Add Pulp 3
  - File
  - Container
- Migration for upgrading users



# Pulp 3

- Django (Python)
- Various Python services
  - pulpcore-api (gunicorn)
  - pulpcore-content (gunicorn)
  - pulpcore-resource-manager (rq worker)
  - pulpcore-worker@i (rq worker)
- Apache as a reverse proxy
- PostgreSQL replaces MongoDB
- Redis replaces Qpid
- No more agent



# Future version: 4.0

- Drop Pulp 2
- Read Candlepin events via STOMP
  - RFC open
- Drop Qpid

THE CATS CASTLE BESIEGED AND STORMED BY THE RATS



up you go Mr puss

Master Tybce prince of Cats

Down with Rats: defend us from them  
if they get up we are undone for ever

My command is to you all  
to Kill the Rats to the death

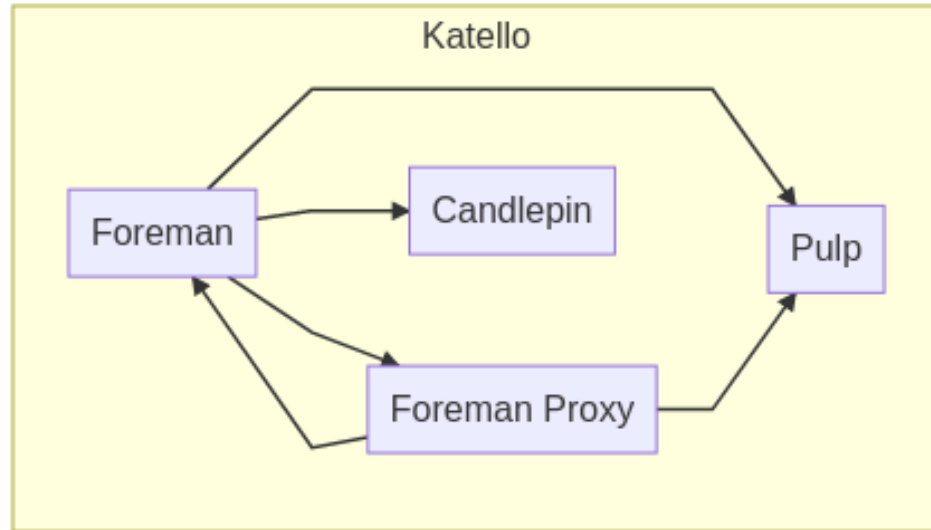
Nigro Musell prince of Ratts

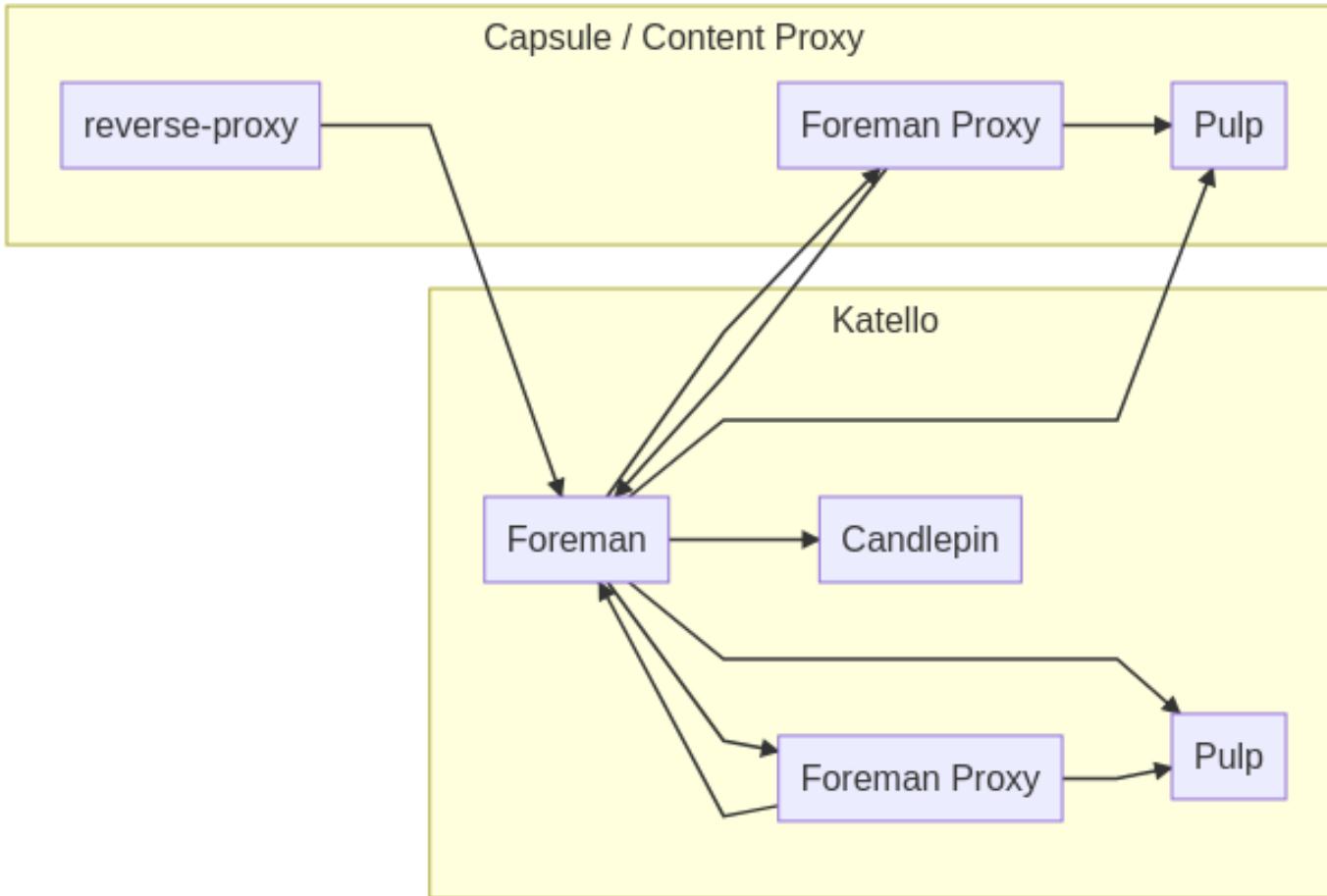
Your commission is to Kill and destroy  
Mischance cats that do your state annoy

Kill or be kill no quarter give  
We will not have a cat to live

Eight cabrate Rats and kill our mortall foes  
We fight it out we will be free their blowes

If we the cats can overmand Kill  
if cheese and Bacon we shall have sur





# Certificates

- Vanilla Foreman defaults to Puppet certs
- Katello uses custom certs
- Replacing is hard

There will not be a Foreman 2.24  
- Tomer Brisker



# Thinking about Foreman 3.0

- Move core functionality to plugins?
- New UI?
- Fill in the survey!

# Thank you

- Questions?
- Comments?

Get ready to test Foreman 2.0.0 RC1