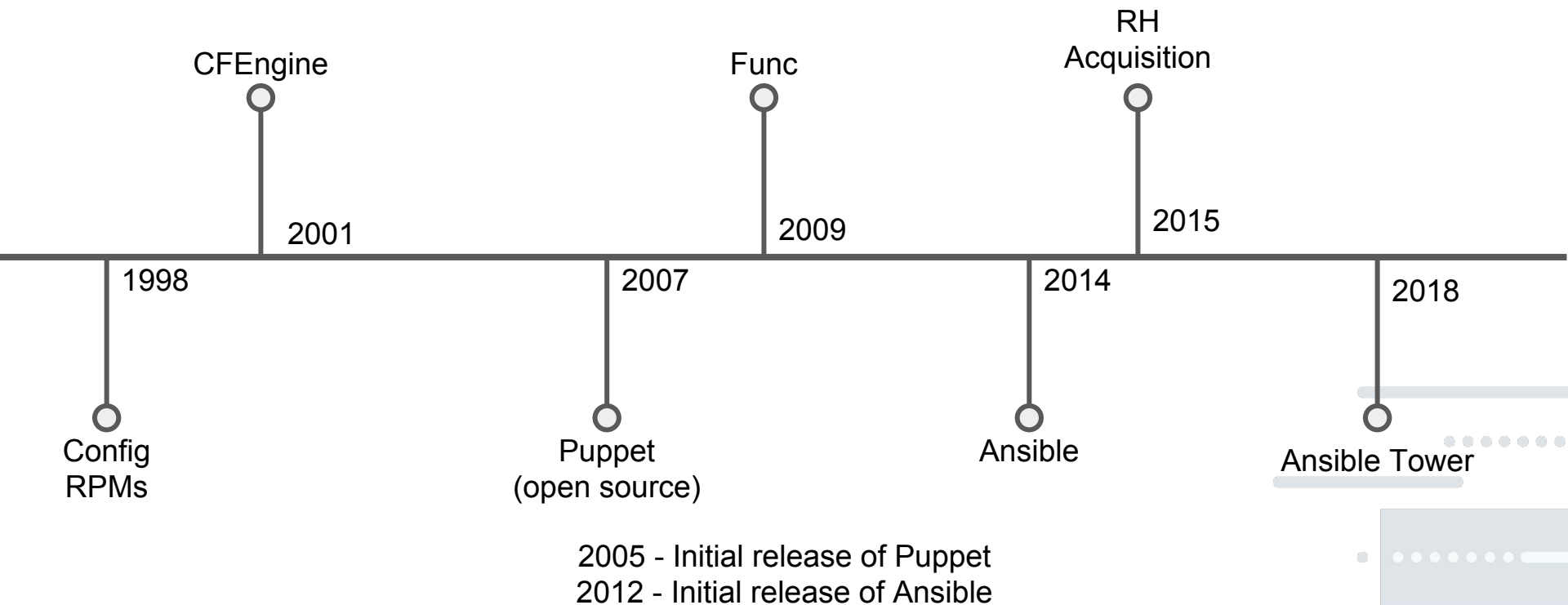# Pulling the Puppet Strings with Ansible

Brian J. Atkisson, RHCA
Principal Architect
May 7, 2019

A Story

# A Brief History of RH IT Config Management

CFEngine

Func

RH
Acquisition

2001

2009

2015

1998

2007

2014

2018

Config
RPMs

Puppet
(open source)

Ansible

Ansible Tower

2005 - Initial release of Puppet
2012 - Initial release of Ansible

CFEngine Migration to Puppet

- Development teams doing own thing
- Applications codified into CFEngine by Operations
- Home-grown templating engine (cfgen)
- Puppet modules developed along side applications
    - Stored in Git
    - Concept for environment
- Per file access model

perl templates

cfgen
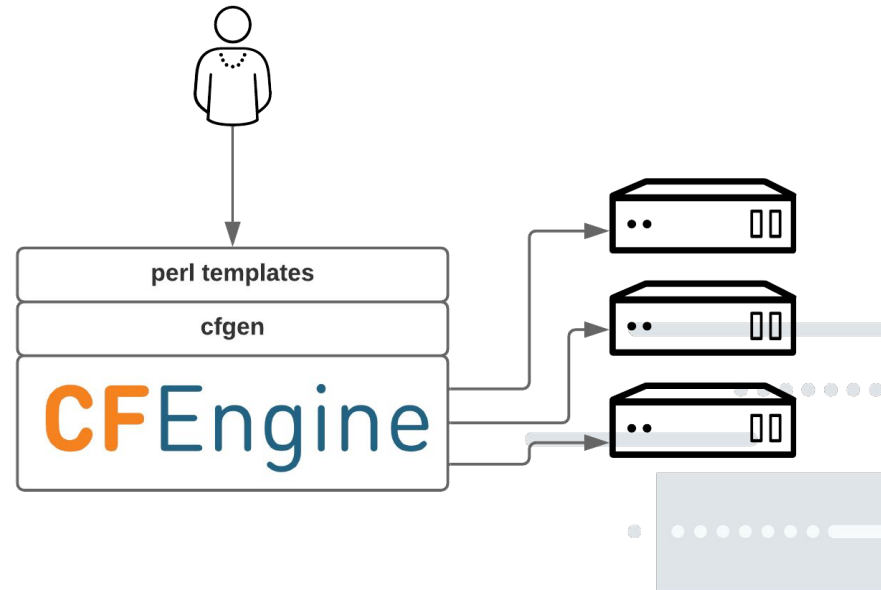
CFEngine

Puppet Management Ideal

- Application teams manage application modules
- Infrastructure teams manage base OS, monitoring, IAM, etc modules
- Release engineering manages modules shared between application teams (JBoss, Java, Rails, Apache, PHP, etc)
- … and there was peace in our time
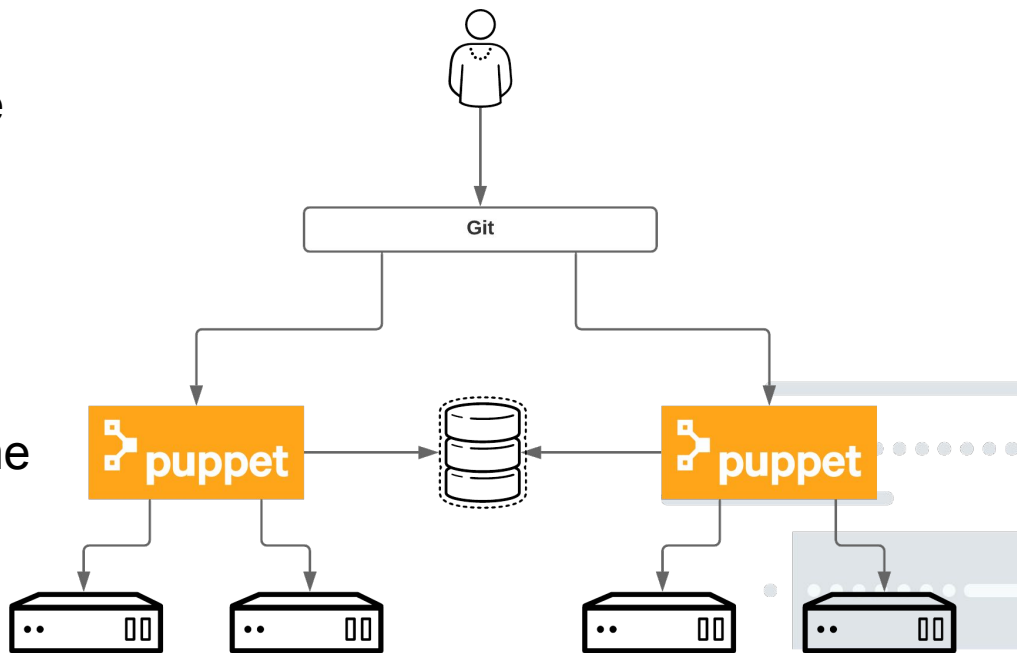
Puppet Realities after a Decade

- Balance between old and new operating systems
- Language is hard to learn
  - Manifests
  - ERB templates
  - Dependency ordering is difficult
    - Especially in large codebases
- Puppet was extremely slow, scaling challenges
  - Reliance on storeconfigs
- Environment predated standard tooling
  - R10k, module packaging, PE

Puppet Realities after a Decade

- Our implementation was even harder to learn
- Updates approaching impossible
  - Large code base
  - Updating modules from puppet 3.x to 5.x
- App developers hate Puppet
  - (and Ruby isn't cool anymore)
- Managed too many objects, including OS defaults
- Puppet is extremely weak at orchestration

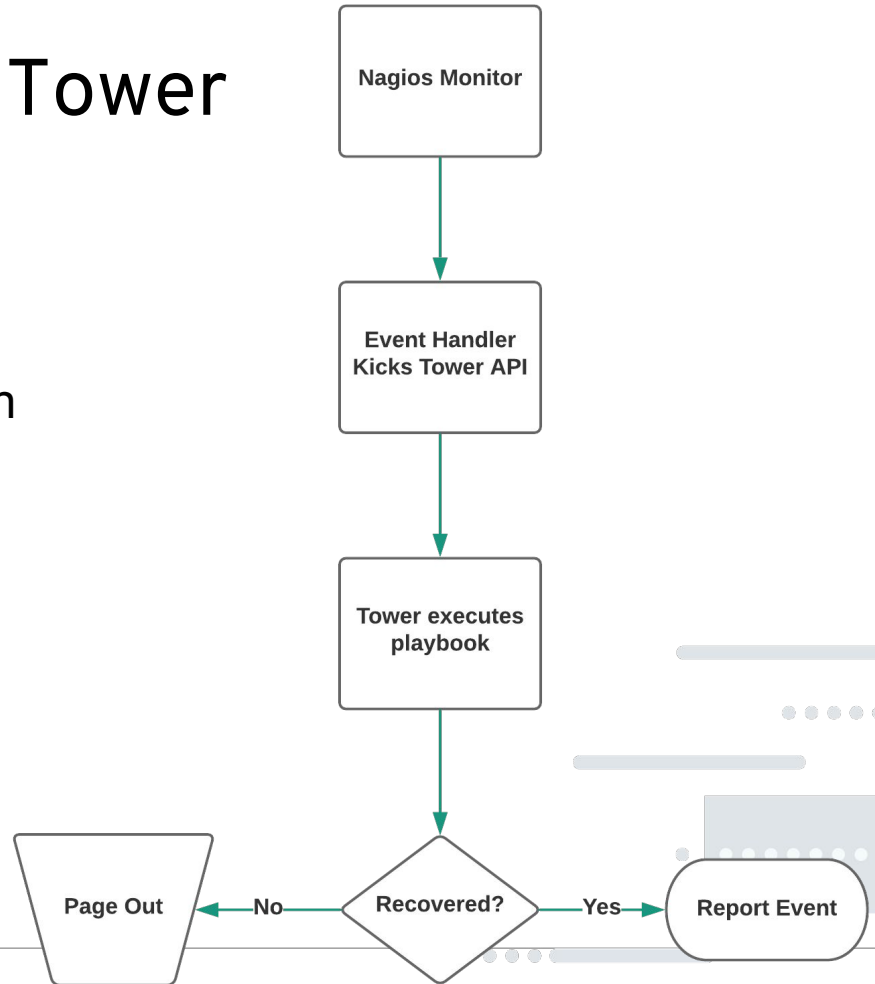`Notice: Finished catalog run in 211.69 seconds`

Hybrid Approach

- Ansible for orchestration
  - Puppet runs kicked off by Ansible
  - Native and/or trivial integration with load balancers, virt platforms and software APIs
- Ordering and dependencies
  - Just write the playbook in order
- Easy to learn and understand execution
- Agentless
- Shared Permission model

Ansible Tower

- Centralized playbook execution
- Credential management
- Remote (API) playbook execution
- Autohealing systems
  - Nagios event handlers
- Metrics

Nagios Monitor

↓

Event Handler Kicks Tower API

↓

Tower executes playbook

↓

Page Out ←—No—— **Recovered?** ——Yes—→ **Report Event**

Wait, So Why Use Puppet at All?

- With Tower, we have central execution point
- Native integration with technologies we care about
- Config, deploy and manage with the same tool
- Extremely well suited to hybrid-cloud use-cases
- Local development is easy
- Secret management
- … and teams want easy

Ansible Usage

- AWS and OpenStack infrastructure
    - Infrastructure, OS configuration and orchestration
    - Long-lived and ephemeral VMs
- Traditional Data Center
    - Provisioning
    - Laying down Puppet-generated OS template
    - Orchestration and Releases
- OpenShift workloads
- CI/CD

Ansible Challenges

- Hiera is just better at managing environment data
  - Including secrets
- Puppet ERB templates
  - More robust than Jinja2 (IMHO)
- Centralized management
  - Absent Tower, centralized auditing is difficult
- Playbook execution can be slow
  - Only manage resources you care about

What's Next

- Internal Galaxy
- Re-architecting data centers
  - Cloud-native architectures on OpenShift and OpenStack
  - Legacy Puppet will likely die with the legacy systems
- Working group to establish grand unified configuration management
  - Ansible key component
    - General Lifecycle, orchestration and management
    - Ephemeral systems
  - Puppet will likely be used for traditional VMs
    - Not everything fits the container or ephemeral models

Questions?
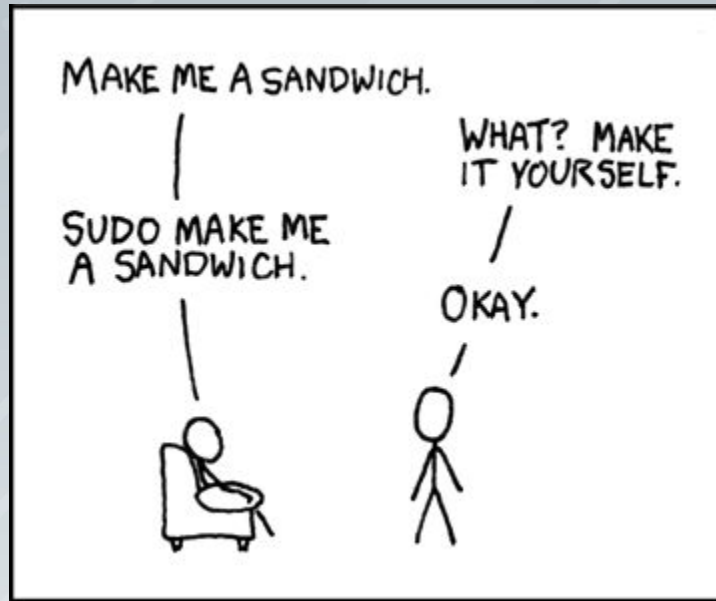
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Wed, May 8 1:00 - 3:00pm	Red Hat IT features: Sidecar that authentication
Thurs, May 9 11:00 - 11:45am	Red Hat on Red Hat: Transitioning Red Hat IT to hybrid cloud infrastructure using OpenStack and Ceph Storage
Thurs, May 9 3:15 - 4:00pm	Developing and running cloud-native apps on OpenShift in Red Hat's IT organization
Thurs, May 9 3:15 - 4:00pm	Developing and deploying applications in a multisite hybrid cloud

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