



**puppet**  
labs

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# A Quick Poll

# The State of IT

More. Faster.

Old practices are  
constraints ...

...and old constraints  
are  
gone

# State of IT Automation

# How Can Organizations Achieve High Performance?

HIGH PERFORMING ORGANIZATIONS SHARE TWO COMMON PRACTICES

**VERSION CONTROL** 89%

*use version control  
for infrastructure  
management*

**+ AUTOMATION** 82%

*use automated code  
deployments*

Get the 2013 State of DevOps Report at <https://puppetlabs.com/solutions/devops/>







Enabling Frictionless  
Technological Change

# Customers Everywhere

## FINANCIAL

Bank of America 

 NYSE Euronext.

 London  
Stock Exchange

 TransUnion.

## TELCO/SP

  
verizon

 MOTOROLA

rackspace 

## INTERNET

Google

twitter 

PayPal

 Constant Contact

## TECH

  
CISCO.

 McAfee

QUALCOMM



## GOVERNMENT



 U.S. DEPARTMENT OF  
**ENERGY**



## DEFENSE

LOCKHEED MARTIN 

NORTHROP GRUMMAN

  
Los Alamos  
NATIONAL LABORATORY  
EST. 1943

## EDUCATION

 HARVARD  
UNIVERSITY

Cal

 University of  
Phoenix

## MANUFACTURING



 BOEING

  
HERSHEY'S  
The Hershey Company

## RETAIL



BARNES & NOBLE  
BOOKSELLERS



## MEDIA

Disney

HBO

CONDÉ NAST

 puppet  
labs

# New Approach: Software Defined Infrastructure

## 1. DEFINE



```
package { ssh: ensure => installed }  
service { sshd: ensure => running, }
```



*Re-usable infrastructure-as-code*

## 2. SIMULATE



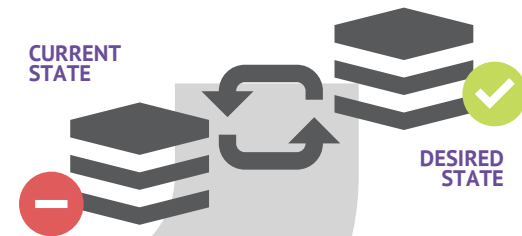
*Before deploying changes*

## 4. REPORT



*Insight into changes*

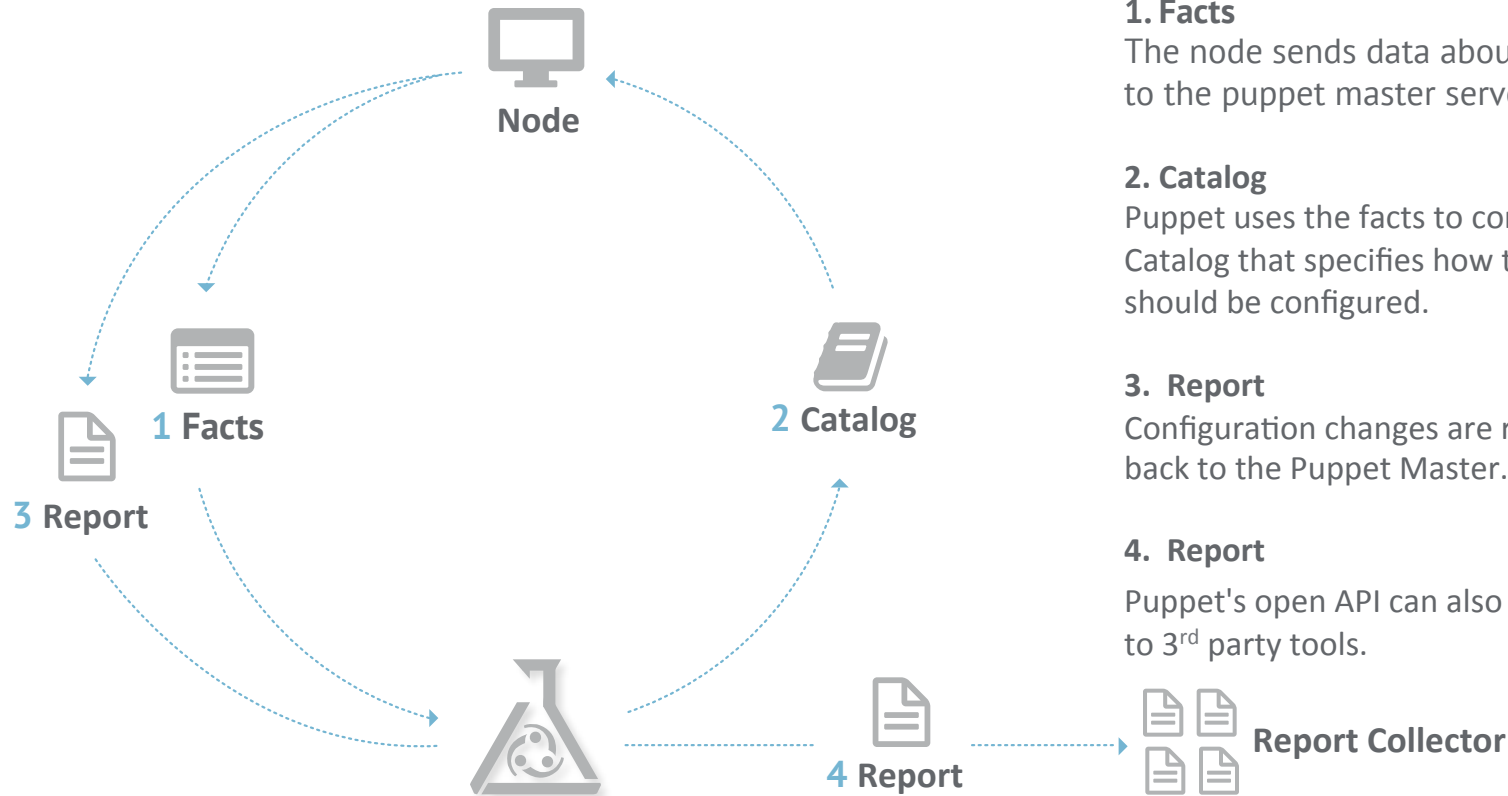
## 3. ENFORCE



*Automatically and reliably*



# Lifecycle of a Puppet Run



## 1. Facts

The node sends data about its state to the puppet master server.

## 2. Catalog

Puppet uses the facts to compile a Catalog that specifies how the node should be configured.

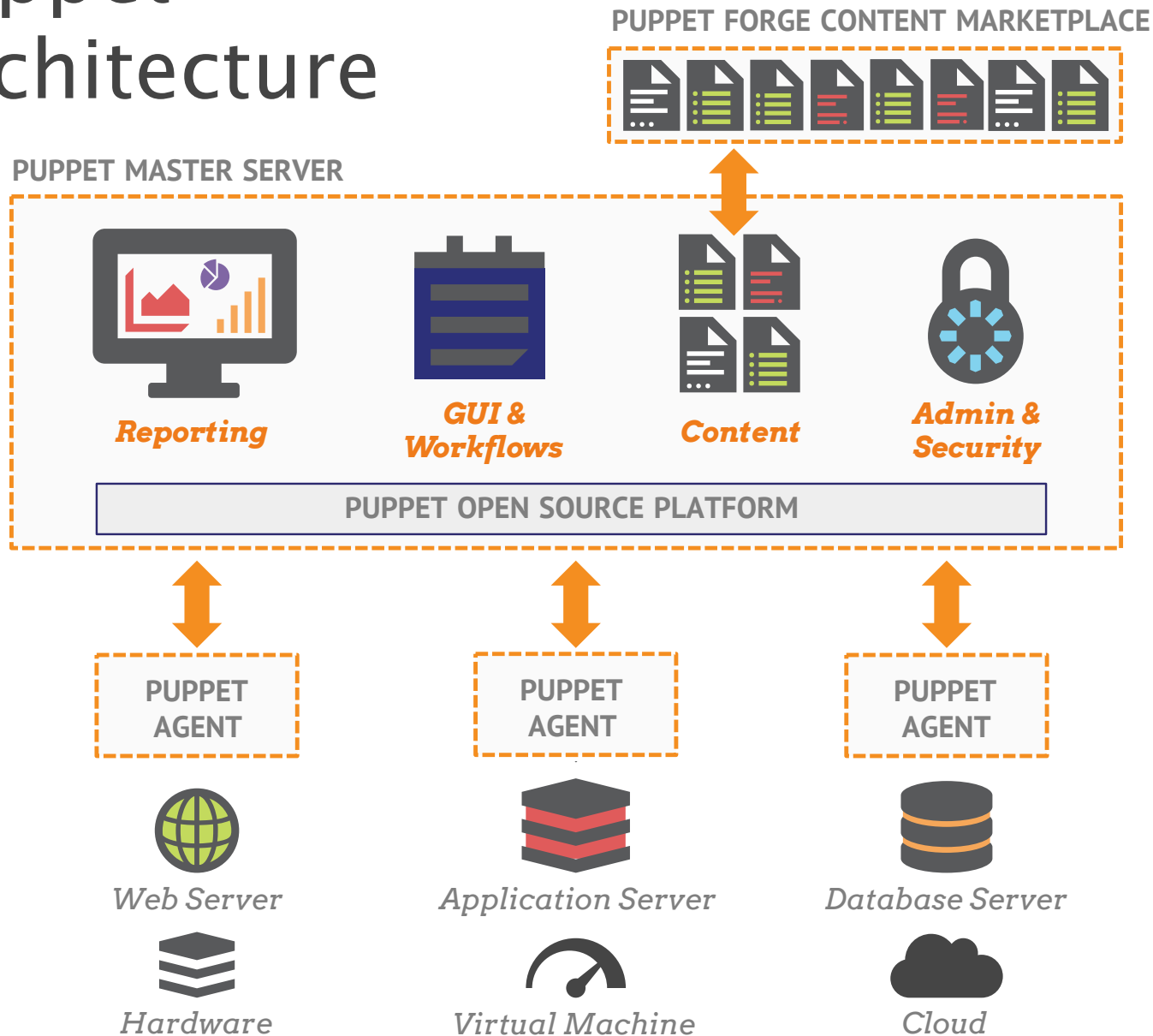
## 3. Report

Configuration changes are reported back to the Puppet Master.

## 4. Report

Puppet's open API can also send data to 3<sup>rd</sup> party tools.

# Puppet Architecture



# Community Growth

**1,700 modules**  
**550 module authors**  
**2.1 million downloads**  
on the Puppet Forge

on the Puppet Forge

2.1 million downloads

**80,000 people**  
have downloaded  
Puppet, PE, MCollective  
or the Learning VM

or the Learning VM

**5,000+ people**  
have attended Puppet  
training classes

training classes

# Easy to Get Involved

- Help with Documentation
- Ask/Answer questions
  - <http://ask.puppetlabs.com>
  - mailing lists
  - IRC
- Help with bug triage
- Contribute code
- Contribute modules on the Forge



The screenshot shows a user profile for 'llowder' on the ask.puppetlabs.com website. The profile includes a navigation menu with 'overview', 'network', 'karma', 'followed questions', and 'activity'. The user's profile picture is a cartoon penguin wearing a red shirt and holding a grey object. The user's karma is 348, and there is a 'follow llowder' button. The profile is categorized as a 'Registered User' with the following details: real name 'Lee Lowder', member since 'Dec 17 '12', last seen '7 hours ago', website 'http://blog.keepingyouhonest...', location 'Springfield, United States', age '31 age unit', and 'todays unused votes 30 votes left'. Below the profile, there are '2 Questions' with a summary showing 'no votes', '1 answer', and '30 views'. A question titled 'Can you chain to a conditional?' is visible with tags for 'modules', 'puppet', and 'DSL'. The date 'Jan 17 '13' is shown in the bottom right corner.

[puppetlabs.com/community](http://puppetlabs.com/community)

# Puppet Enterprise



# Innovation & Reliability: Open Source & Puppet Enterprise

## Upstream Open Source Projects



## Commercial Product



## Environment for **Nurturing Innovation**

- ~8,000 members
- Latest technologies
- Rapid release cycles
- ~1000s of changes / week
- Community support (IRC, forums)

## IT Automation for **Business-Critical Apps**

- Commercial-only functionality
- Single, integrated solution
- Graphical User Interface
- Installer & upgrader
- QA'd & security hardened
- Performance tuning
- API guarantees
- Support & maintenance
- Training & services

# Puppet Enterprise Overview

CLOUD-BASED  
CONTENT  
REPOSITORY

Puppet Forge

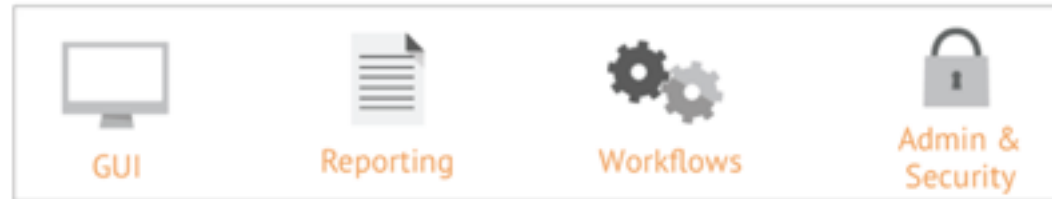


1,300+ Pre-Built  
Automation Solutions

Puppet Master



CENTRALIZED  
MANAGEMENT  
SERVER



DISTRIBUTED  
AGENTS



Agent



Hardware Node



Agent



VM Node



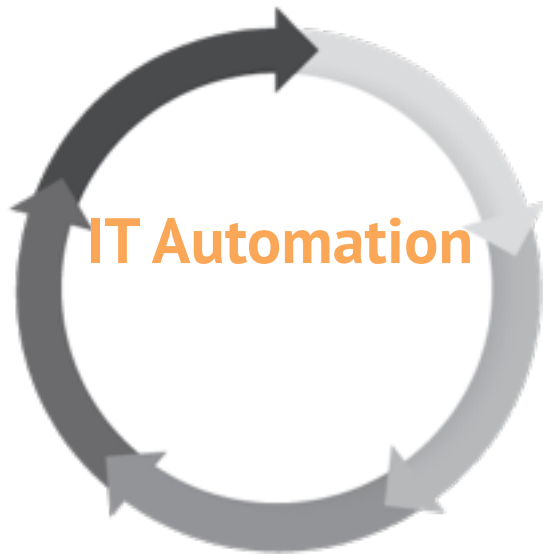
Agent



Cloud Node

# Puppet Enterprise

IT automation for end-to-end infrastructure lifecycle management



**Discovery** of nodes, resources, and status using real-time data

**Provisioning** of bare metal, virtual, and cloud capacity

**Configuration** installation and configuration of operating systems and applications and automated enforcement

**Orchestration** of multi-step operations to targeted collections of nodes

**Reporting** of all state changes of all resources across all nodes

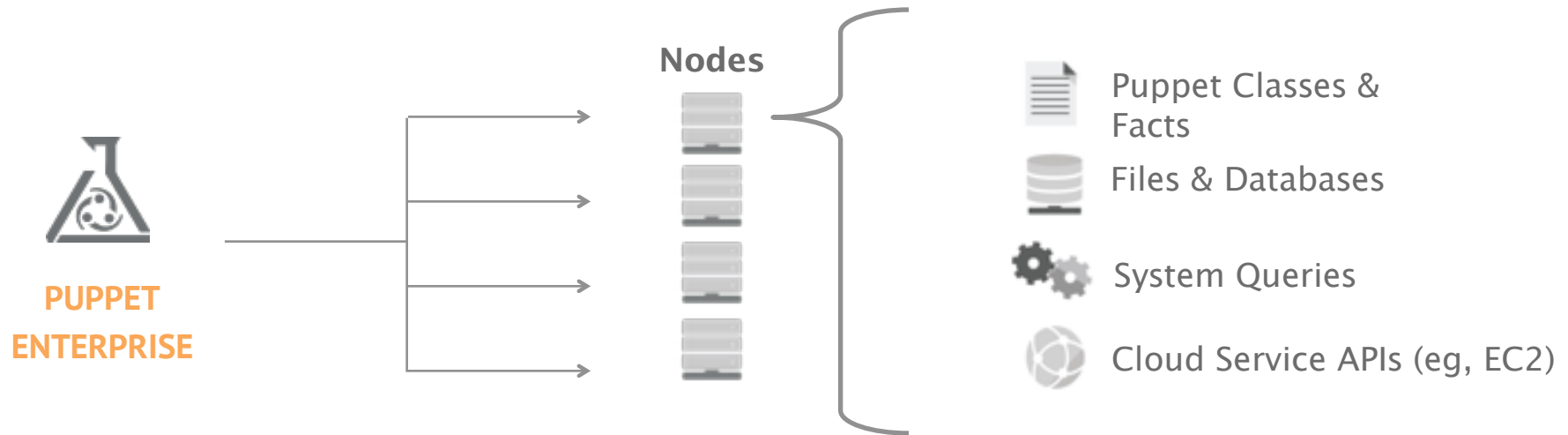
# Puppet Enterprise: Discovery

Dynamic, real-time discovery of nodes, resources, and state

Address all nodes **simultaneously**

Query **any data source** on a node

```
% mco find -S "environment=QA and !dept=sales"
```



## No More Outdated CMDBs

Current deployment = source of truth

## Ask Specific Questions

Focus queries using booleans and regular expressions

## Scalable, Real-time Responses

Asynchronous message bus-based architecture

# Puppet Enterprise: Provisioning

Quickly stand-up private and public cloud infrastructure



**Provisions** instances and install agents



Agents **register** with master



Agents **apply** configurations



## Leverage Existing Work

Re-use on-premise configs  
for cloud deployments

## Many Clouds, One Solution

Avoid lock-in to cloud  
vendor-specific APIs

## Prevent Cloud Drift

Maintain consistent  
environments between on-  
premise and the cloud

# Puppet Enterprise: Configuration

Improve agility and productivity through defining and enforcing a desired state

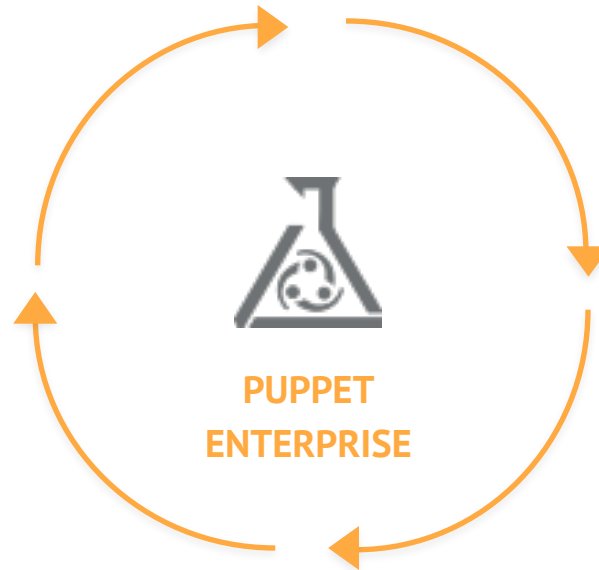


1. **Define** the desired state

```
service { 'ssh':  
  ensure => running,  
  enable => true,  
  subscribe => File['/etc/sshd_config']  
}
```



4. **Report** on differences and any changes made



Current State      Desired State

2. **Simulate** configuration changes

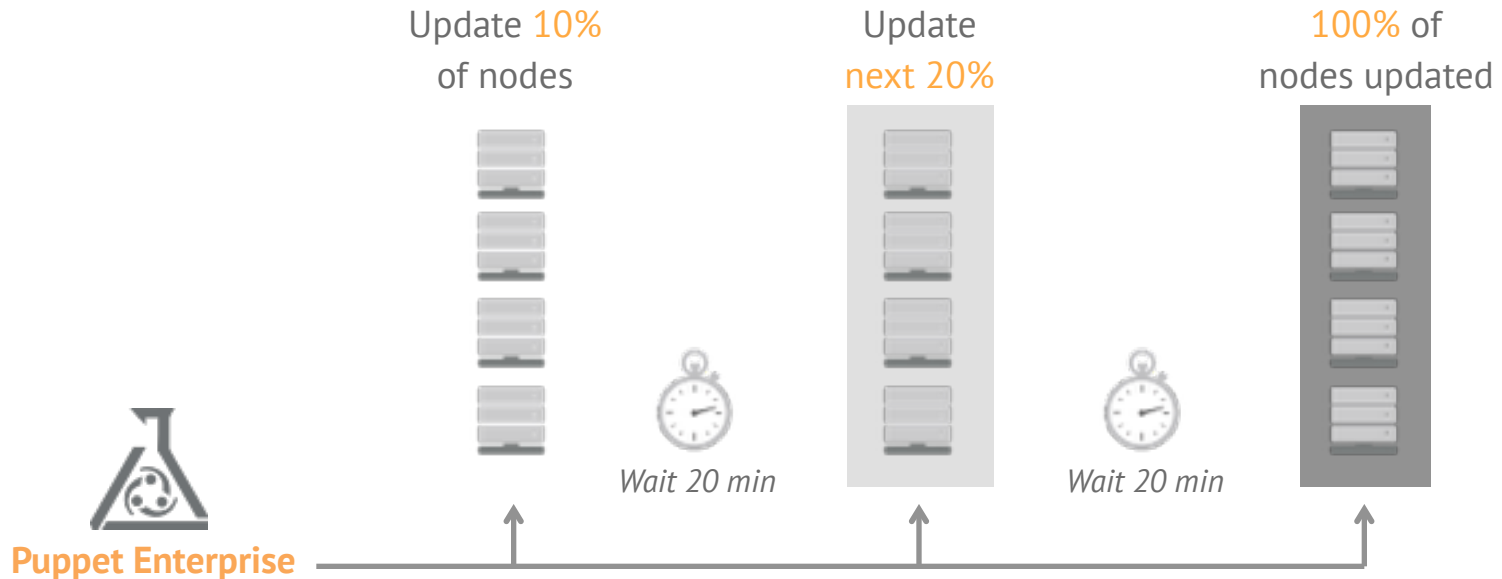


3. **Enforce** the deployed desired state – automatically

# Puppet Enterprise: Orchestration

Controlled, multi-step operations to targeted collections of nodes

Goal: update Apache on all QA nodes



## Dynamic Multi-step Operations

Chain the outputs of one operation into the next

## Manage Change Rate

Progressively apply changes to sub-sets of nodes

## Control Change Scope

Apply changes only to specifically tagged nodes

# Puppet Enterprise: Reporting

Inventory and change data accessible via GUI and APIs

## Comprehensive Infrastructure Data

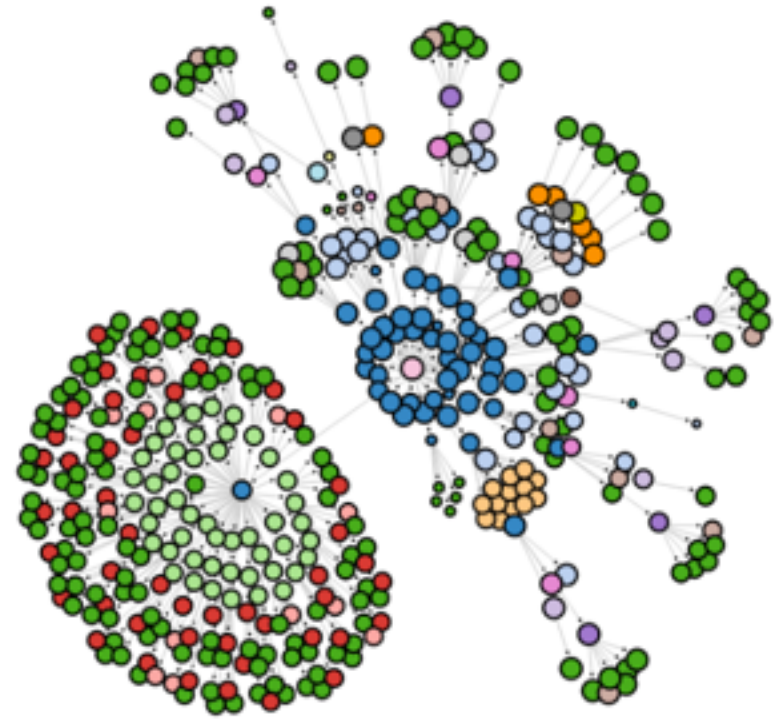
Hardware and software inventory, change reports, configuration graphs

## Open Standards

YAML, JSON, and .dot-formatted data accessible via RESTful API

## Rich Ecosystem of Tools

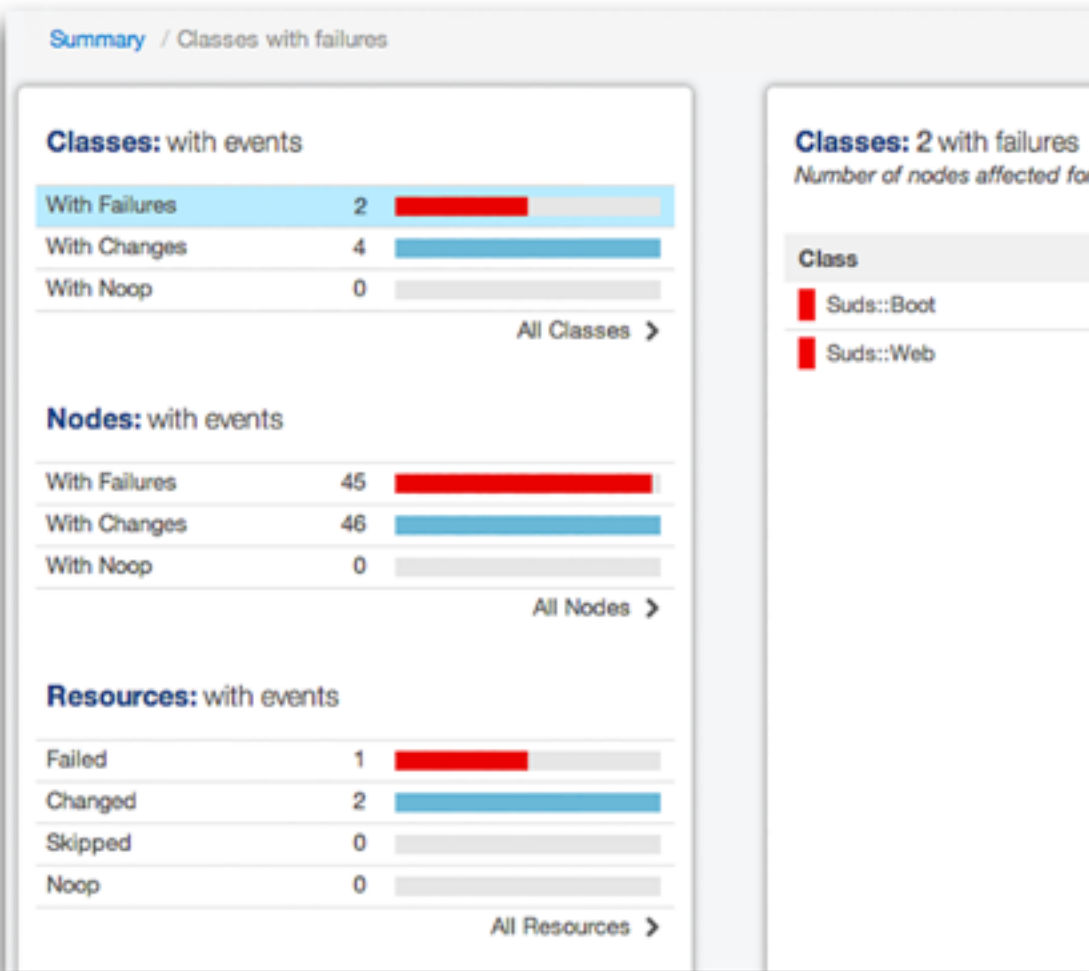
Boundary, New Relic, Graphite, GraphViz, Gephi, and many more





# Puppet Enterprise: Event Inspector

Quickly understand and act on changes occurring in your infrastructure



**Know What Changed, Where, & How**  
Visualize infrastructure changes by Node, Classes, and Resources

**Understand the Impact**  
Drill-down, zoom-out to evaluate the scope of changes

**Take Action & Improve Service Levels**  
Get the specifics to address and manage change

# Puppet Enterprise: Role-Based Access Control

Read-only, Read-write, and Admin roles

## Easy Set-up

Quickly create new users through the Puppet Enterprise console GUI

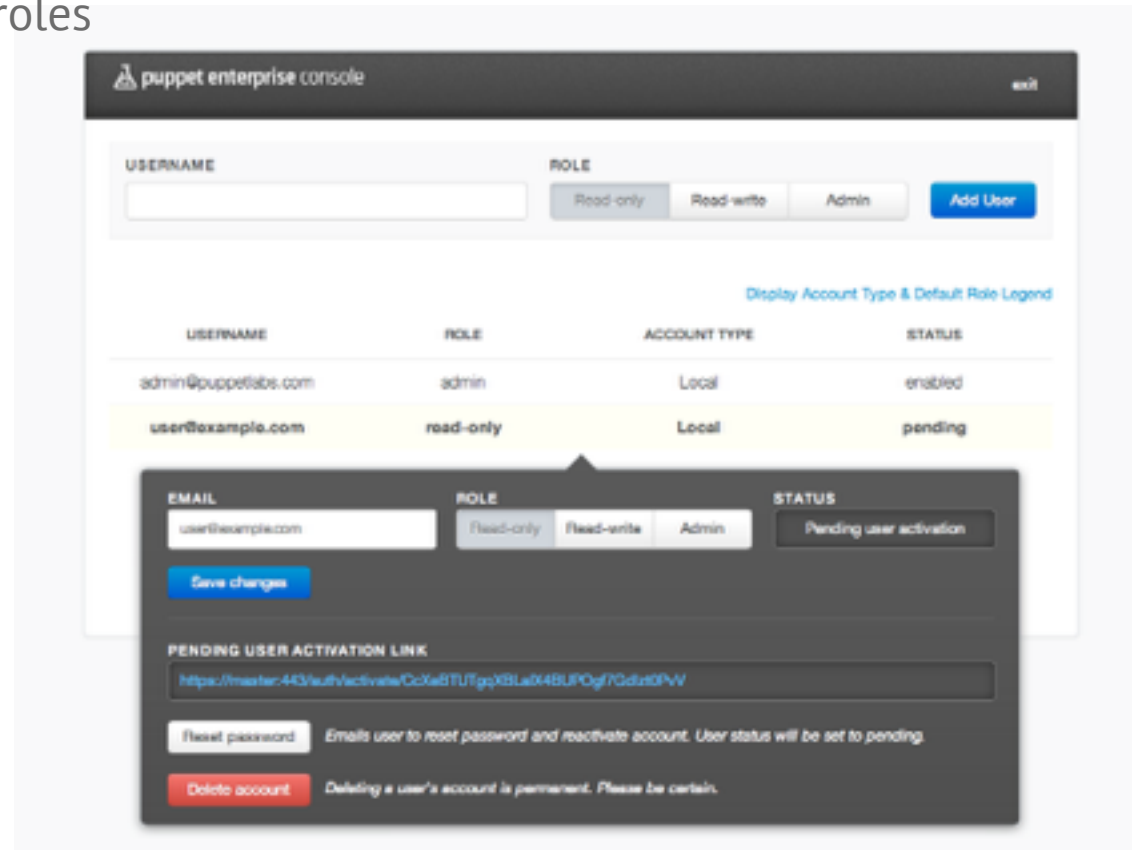
## Easy Installation

Select from Read-only, Read-write, or Admin roles

## Native Resource Support

Users' activities logged and auditable

**Third-Party Authentication Support** LDAP, Active Directory, Google Apps



# The Projects that Make Puppet Awesome

# Puppet

- Core project in the Puppet ecosystem
- Idempotent, model-based configuration management
- A simple language to describe state and an engine for enforcing it
- Huge library of reusable modules on the Puppet Forge

Puppet Enterprise built on top of Puppet



# MCollective (mco)

- Framework for server orchestration
- Parallel, real-time job execution
- Pluggable discovery of resources
- Target only the systems you want
- Extensible through simple Ruby agents

Drives Orchestration Engine in Puppet Enterprise

# PuppetDB

- Foundation for applications that use Puppet data
- Central storage for catalogs and facts that are part of your puppet infrastructure
- Incredibly fast replacement for existing ActiveRecord stored configs
- The most recent facts and catalog for every node

Foundation for Puppet / Puppet Enterprise data storage

# Hiera

- Simple, pluggable Hierarchical Database
- Key/value lookup tool for configuration data
- Keeps site-specific data out of your manifests
- Puppet classes request data and Hiera will act like a site-wide config file
- Makes it easy to configure nodes, re-use Puppet modules and publish your modules

Foundation for Puppet / Puppet Enterprise Hierarchical Data

# Facter

- Collects Facts about each system and uploads them to the Puppet master, making an inventory system and a way to make decisions in your Puppet code
- Facts are available as variables in the Puppet DSL, like '\$operatingsystem'
- Super easy to plug-in additional facts in Ruby
- External Facts let you extend your inventory without Ruby:
  - shell, batch files or Powershell on windows, raw YAML

Foundation for Puppet / Puppet Enterprise Inventory



# Razor Provisioning

- Rules-based provisioning for bare metal hardware and virtual servers
- Developed in cooperation with EMC/VMWare
- Easily deployed via a puppet module from the Forge
- Automatically brings new servers into your puppet infrastructure
- Open, pluggable, and programmable
- **Not yet ready for prime time – Help us get there by filing bugs and contributing to the community**

# Puppet Forge: Module Repository

- By the community ... For the community
- Identify and use the best ones
- Contribute your own modules

	Jan 2012	November 2013
Modules	260	1735+
Total Downloads Since Feb 2012		2.1+ million

Add Additional Functionality to Puppet / Puppet Enterprise



# Puppet Test Pilot Program

**PARTICIPATE IN USER RESEARCH.  
INFLUENCE PRODUCTS.  
GET T-SHIRTS AND GIFT CARDS.**

*Sign up at [puppetlabs.com/ptp](https://puppetlabs.com/ptp)*

# Puppet Labs



# Puppet Labs: by the numbers

	Jan 2012	September 2013
Employees	55	190+
Customer Countries	29	42
Office Space	836 m <sup>2</sup> 9,000 ft <sup>2</sup>	2,232 m <sup>2</sup> 25,000 ft <sup>2</sup>

# We're Hiring!

Professional Services Engineer (Boston)

Professional Services Engineer (Chicago)

Professional Services Engineer (Dallas)

Professional Services Engineer (London)

Professional Services Engineer (USA)

Professional Services Engineer (Washington D.C.)

Professional Services Project Manager

Sales Engineer (Atlanta)

Sales Engineer (Chicago)

Sales Engineer (Dallas)

Sales Engineer (Portland)

Support Engineer

Technical Instructor

Build Developer

Engineering Manager

Engineering Project Manager

Frontend Software Engineer (PE)

Future Opportunities - Product Management

Infrastructure and Tooling Engineer

Performance Test Engineer

Product Owner

Puppet Forge Modules Engineer

Software Engineer (MCollective)

Software Engineer (Platform)

Software Engineer (Puppet Enterprise)

Software Engineer (Puppet Forge)

Software Engineer (Windows Support)

SQA Engineer

Chief Financial Officer

Technical Recruiter

Director of Marketing - Demand Gen

Director of Marketing - Marcomms

Drupal Developer

Enterprise Marketing Manager

Events Coordinator (Contractor)

Marketing Analyst

Product Marketing Manager

Public Relations Manager

Account Manager

APAC Sales Director

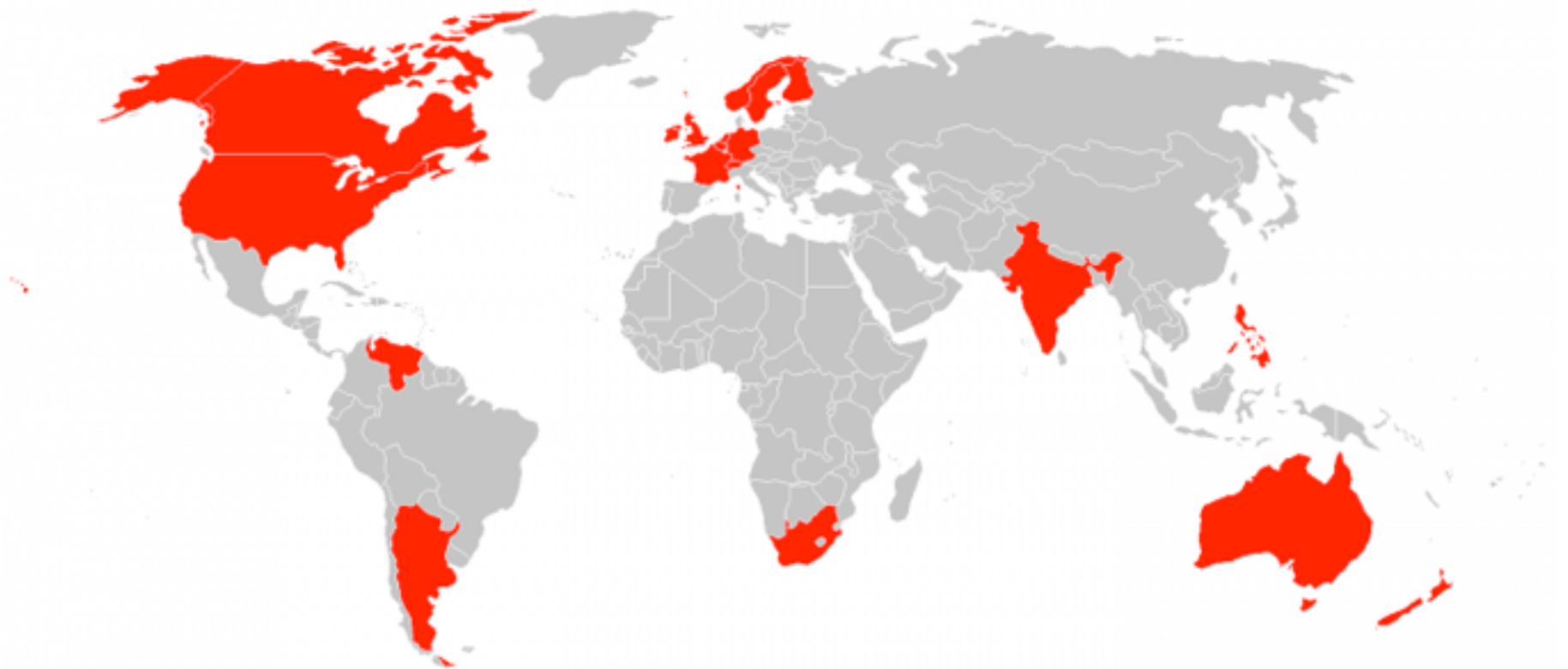
Channel Partner Sales Manager

Field Sales Representative (Federal)



# Training & Certification

# Training by Country





# Training Courses and Certification

## Education & Certification Roadmap

	Admin	Developer
Foundation	<b>Puppet Fundamentals*</b>	<b>Puppet Fundamentals*</b>
Intermediate	<b>Advanced Puppet</b>	<b>Advanced Puppet</b>
Task Specific		<b>Extending Puppet*</b> <i>Using Ruby</i>
Certification	<b>Puppet Professional</b> <i>PPT - 201</i>	<b>Puppet Developer</b> <i>PPT - 301</i>

*\* Recommended preparation for Certification Exam*

# New Online Training

## The Puppet Labs Workshop (online learning)



Short



Video-based



Single Focus



Exercises



Quizzes

[puppetlabs.com/learn](https://puppetlabs.com/learn)

# New to Puppet?

- <https://puppetlabs.com/learn>
- <http://docs.puppetlabs.com/learning/>

# New in Puppet (core)

- External CA support (as of 3.2.0) (guide on [docs.puppetlabs.com](https://docs.puppetlabs.com))
- OpenWRT OS Support (3.2.0) (Facts, Packages, Services). #19877
- ordering setting. Control over ordering when applying catalogs. ([docs.puppetlabs.com](https://docs.puppetlabs.com)) (v 3.3.0)
- HTTP redirection (301, 302, 307). Useful for master's front-end webserver to send fileserver traffic to closest server. (3.3.0)
- Module skel directory setting (`module_skeleton_dir`) for module generate (3.3.0) (`module_skeleton_dir`)

# New in Puppet (core) 3.4.0 (rc)

- 3.4.0 RC1 released December 3
- Backward-compatible feature & fix release
- New “contain” function removes need for “anchor pattern”
- Policy-based certificate autosigning
- “priority” setting for puppet agent and puppet apply
- New \$trusted hash with trusted node data (#19514)
- file resources can opt-out of source permissions (source\_permissions attribute)

# New in Puppet (core) 3.4.0 (rc) more

- Cached catalogs work again (regression in 3.0.0)
- Improvements to error handling class parameter lookups in hiera. More informative errors.
- Windows improvements (symlinks, source perms, versionable packages, group type – add domain users to local admin group, exec improvements – exit codes, installer improvements)
- rpm provider now supports “install\_options” (e.g. —prefix)
- [http://docs.puppetlabs.com/puppet/3/reference/release\\_notes.html](http://docs.puppetlabs.com/puppet/3/reference/release_notes.html)



# Questions?





Thank You!

Learn More:

<http://puppetlabs.com>

<http://puppetlabs.com/community>

<http://puppetlabs.com/puppet/puppet-enterprise/>