dynatrace

Automated Deployments
with Ansible

South Florida User Group, Fort Lauderdale, 31st March 2015

Martin Etmajer, Technology Strategist @Dynatrace

Martin Etmajer

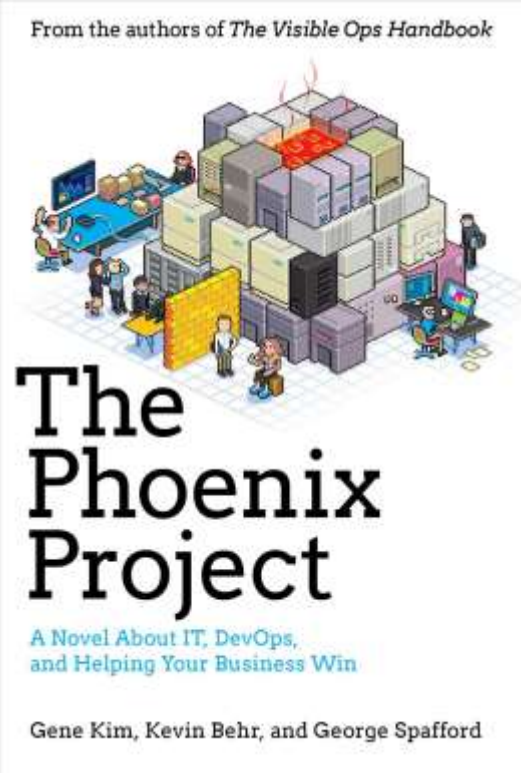
Technology Strategist @ Dynatrace

martin.etmajer@dynatrace.com

@metmajer

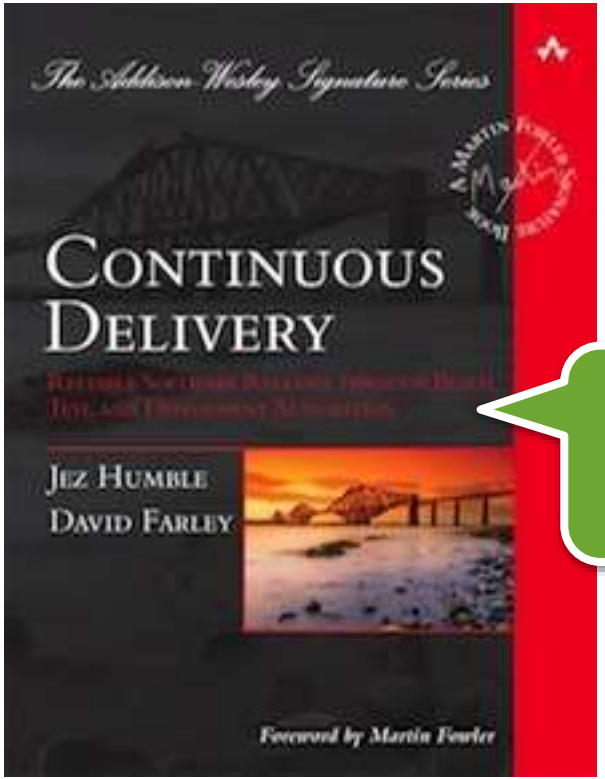
Introduction

The Phoenix Project



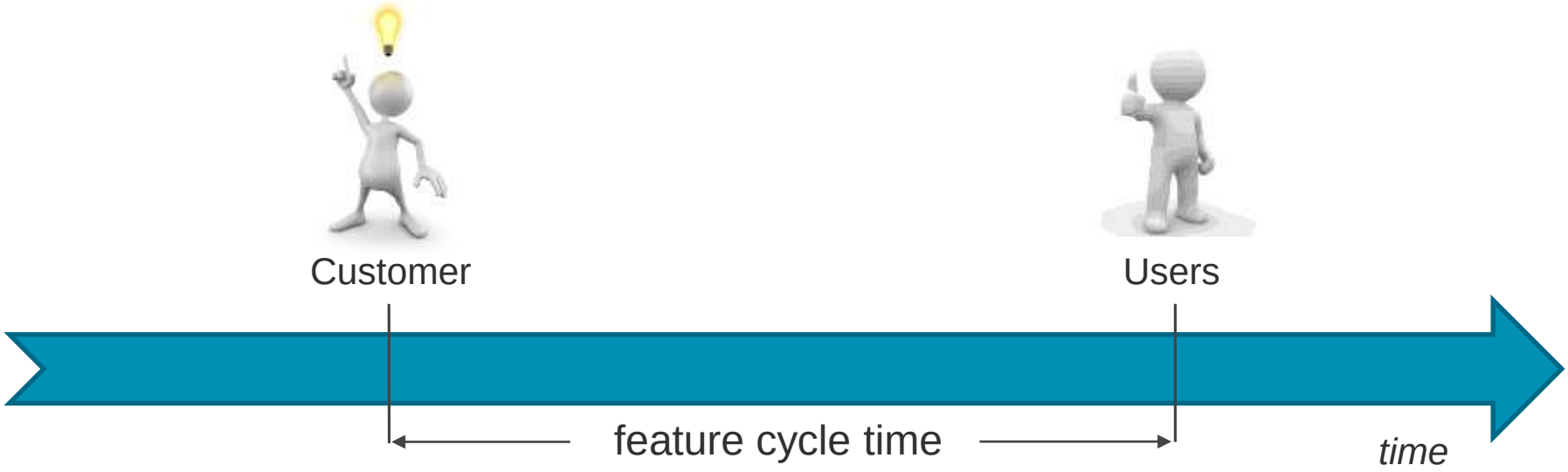
The Phoenix Project: Review

Continuous Delivery

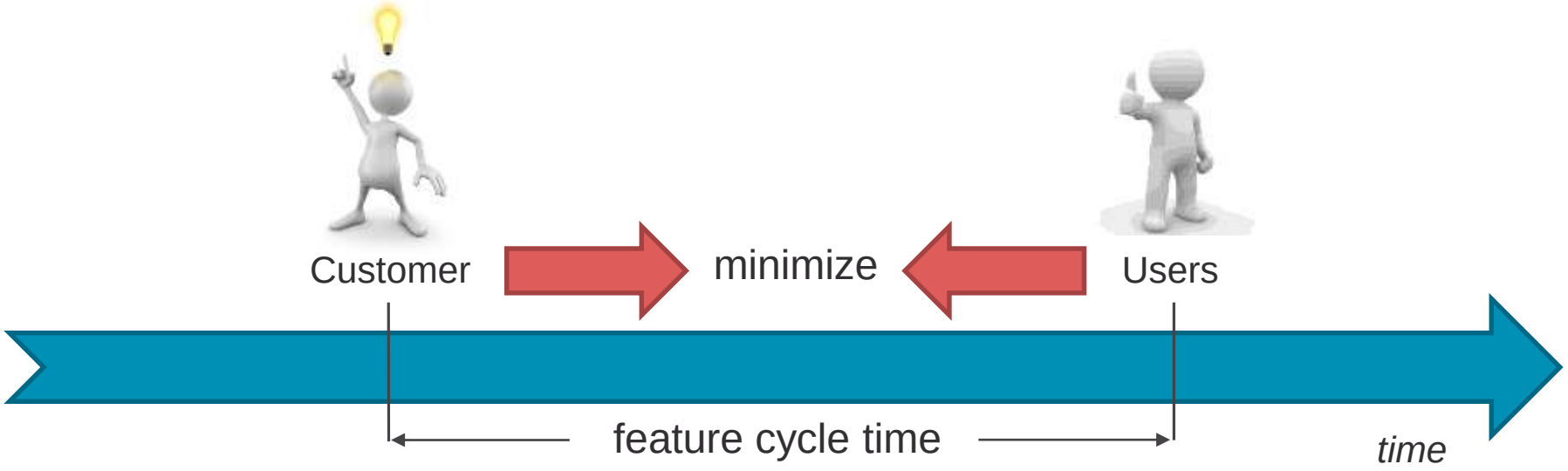


Reliable Software Releases through
Build, Test and **Deployment Automation**

Utmost Goal: Minimize Cycle Time



Utmost Goal: Minimize Cycle Time



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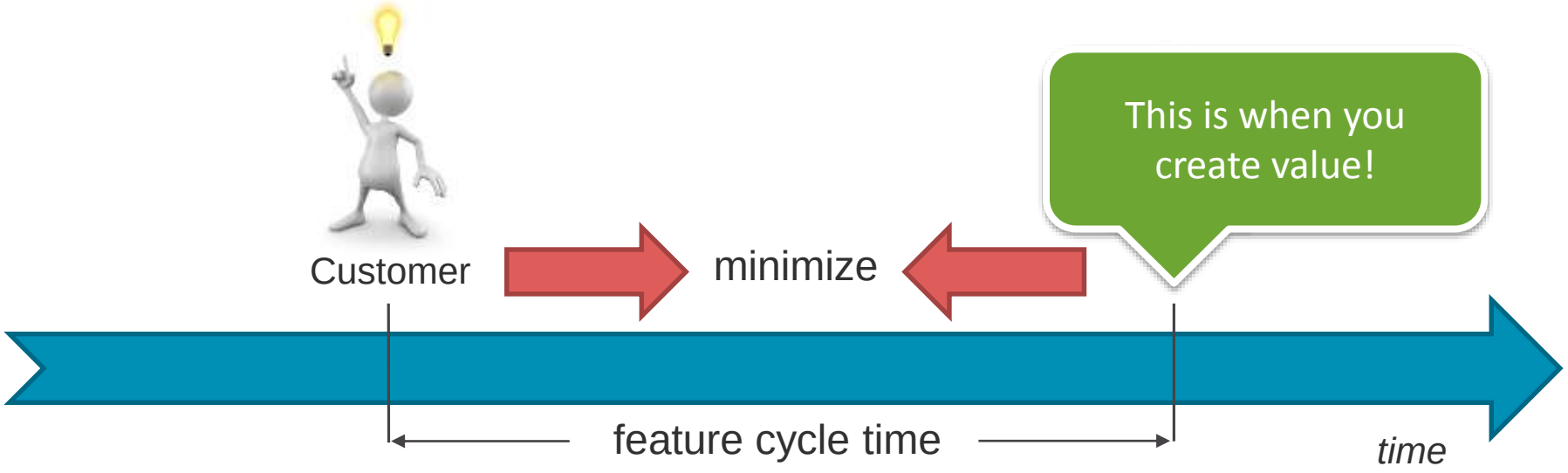
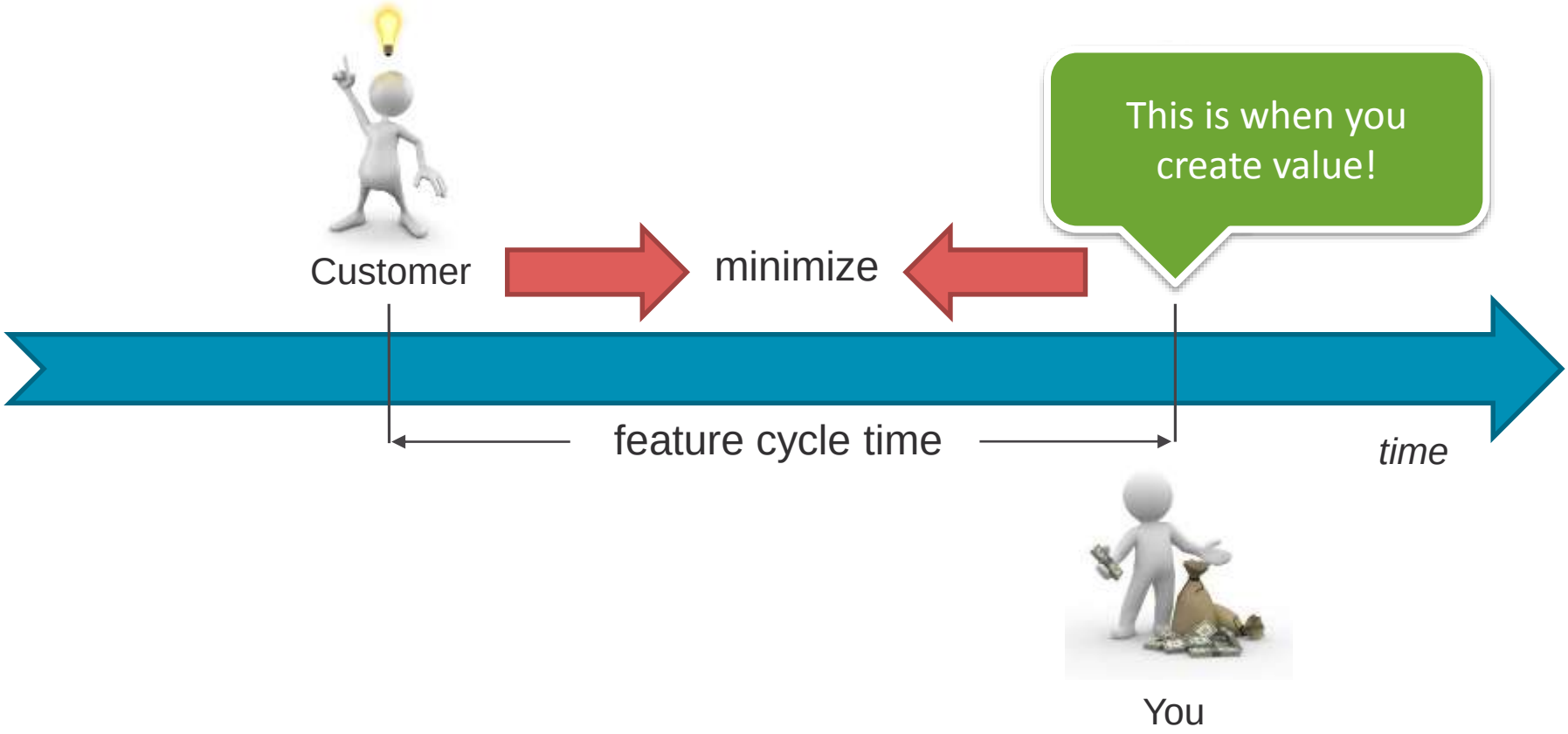


Utmost Goal: Minimize Cycle Time



Utmost Goal: Minimize Cycle Time

It’s about getting your features into your user’s hands

as quickly as possible!

You

Agile Manifesto: Principle #1

"Our highest priority is to satisfy the customer through **early and continuous delivery of valuable software**."

#1 Principle of the Agile Manifesto

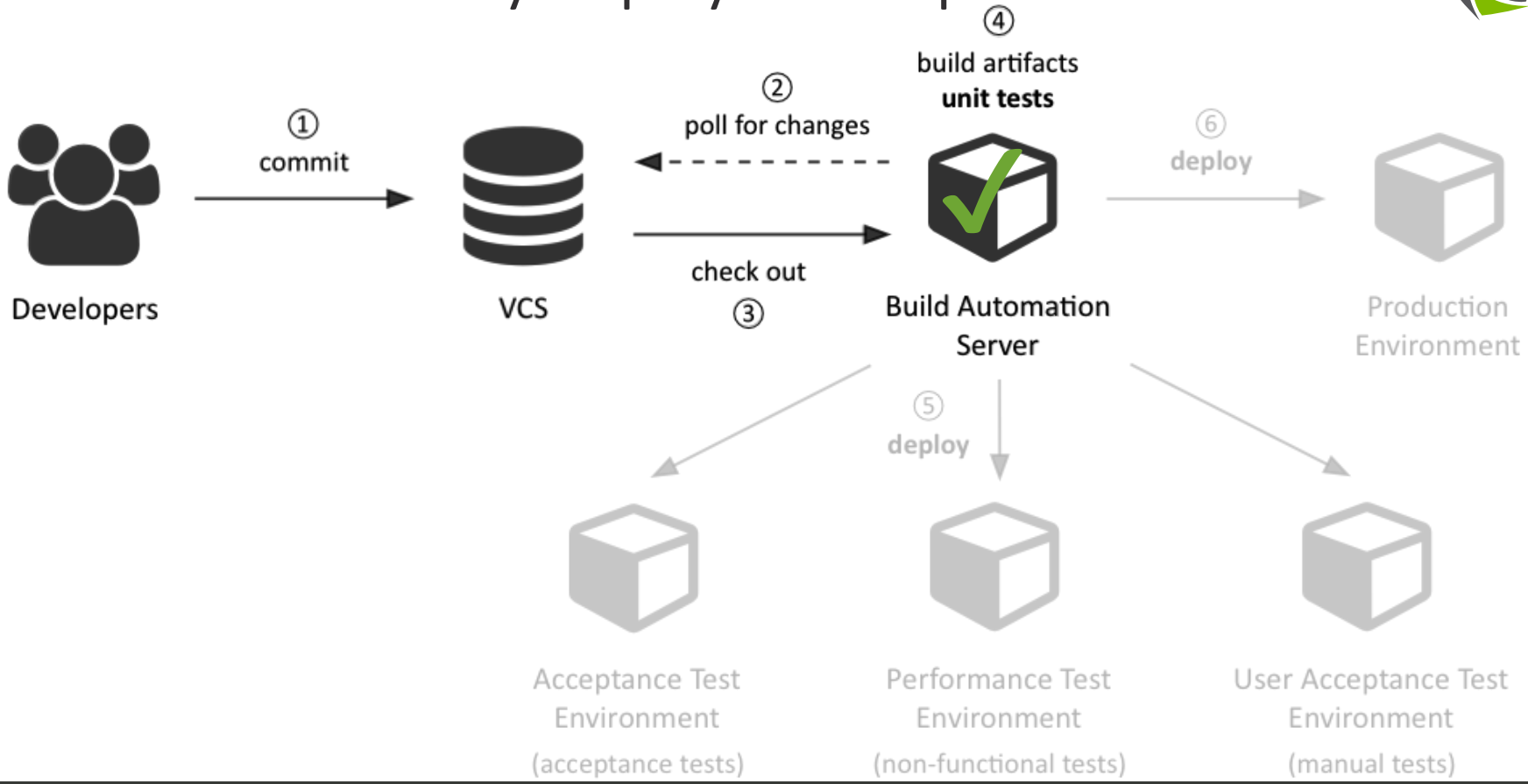
Continuous Delivery Deployment Pipeline

...which is at the heart of Continuous Delivery, defined as:

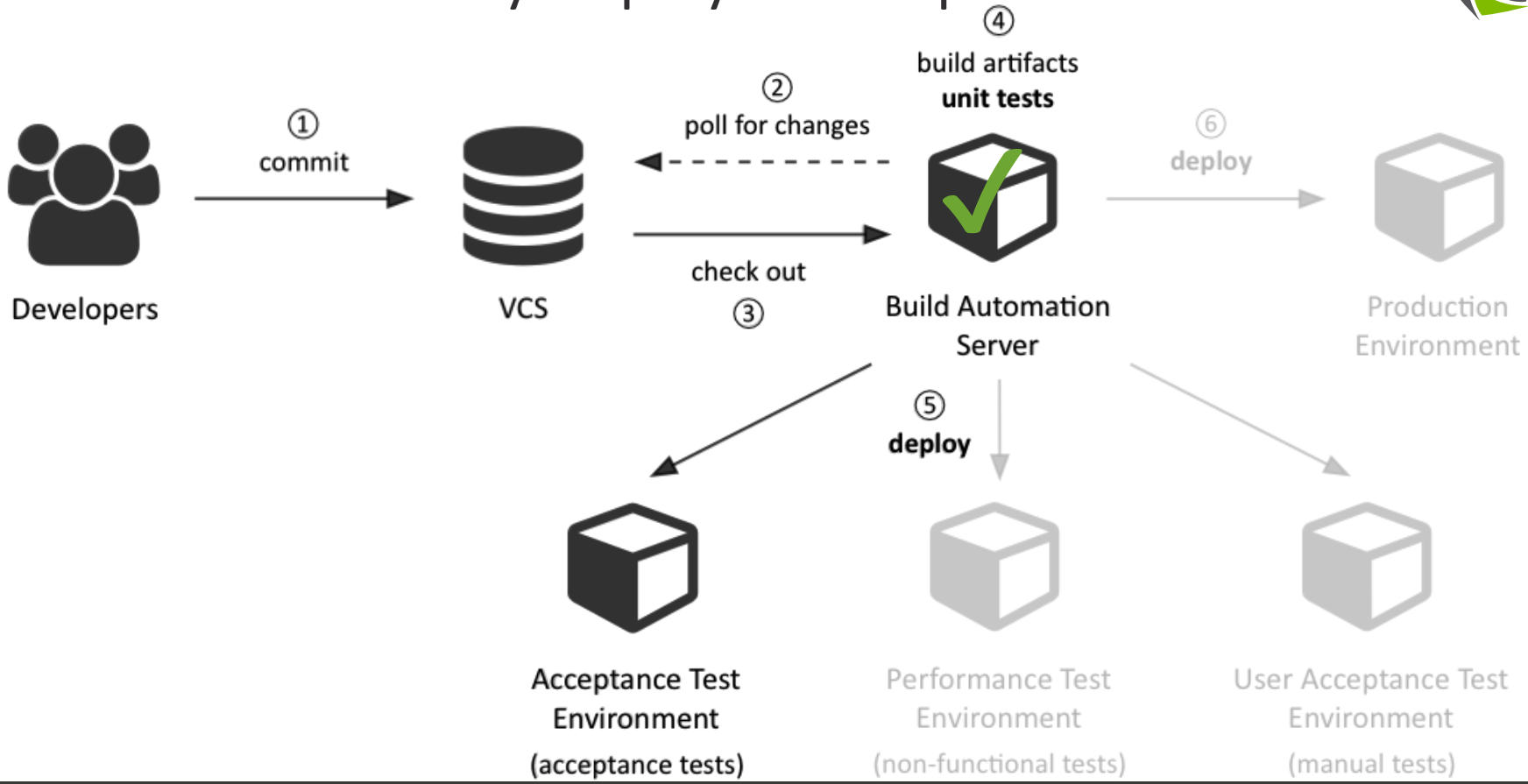
*"A deployment pipeline is, in essence, an **automated implementation** of your application's **build, deploy, test and release** process."*

Jez Humble & Dave Farley in Continuous Delivery

Continuous Delivery Deployment Pipeline



Continuous Delivery Deployment Pipeline



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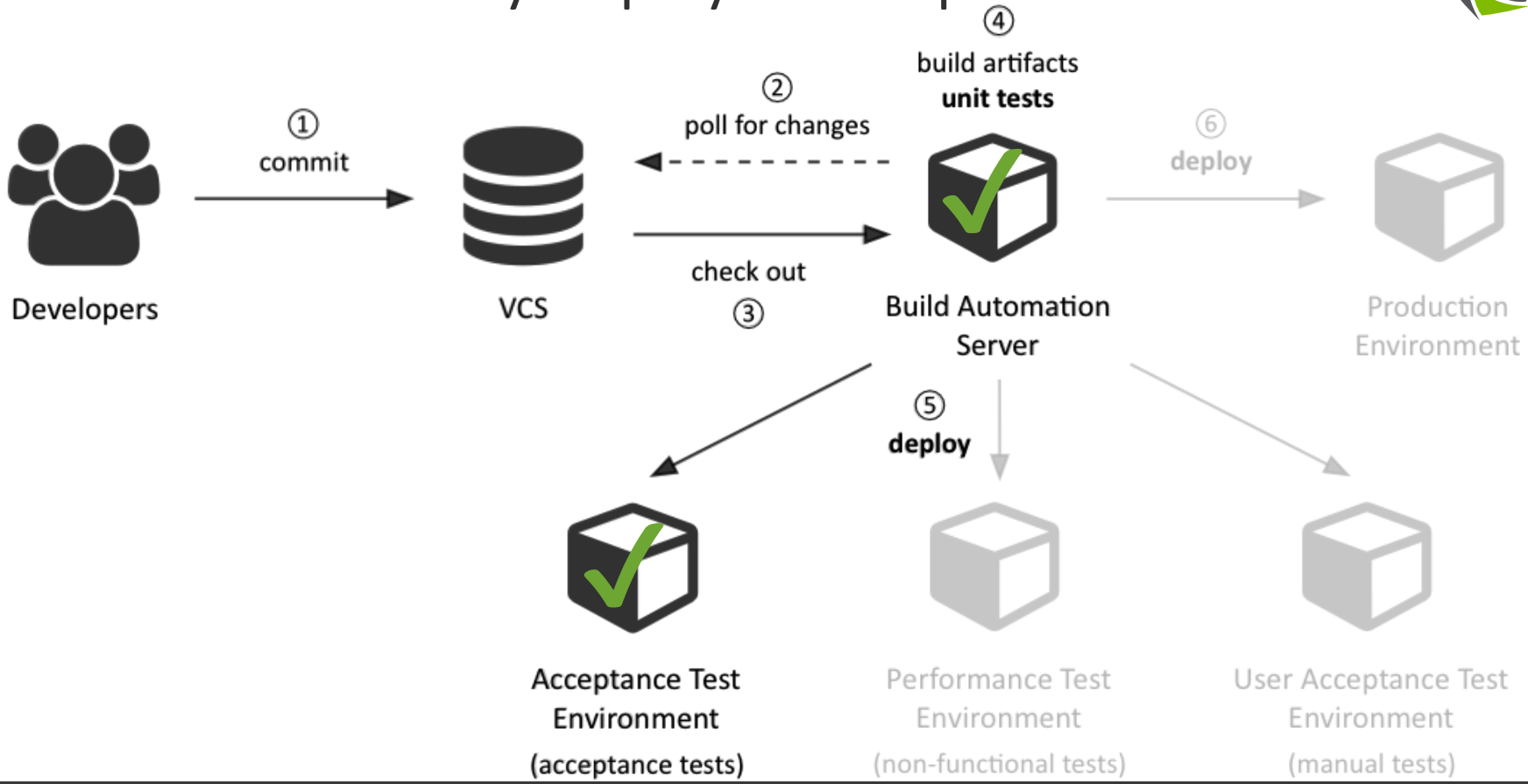

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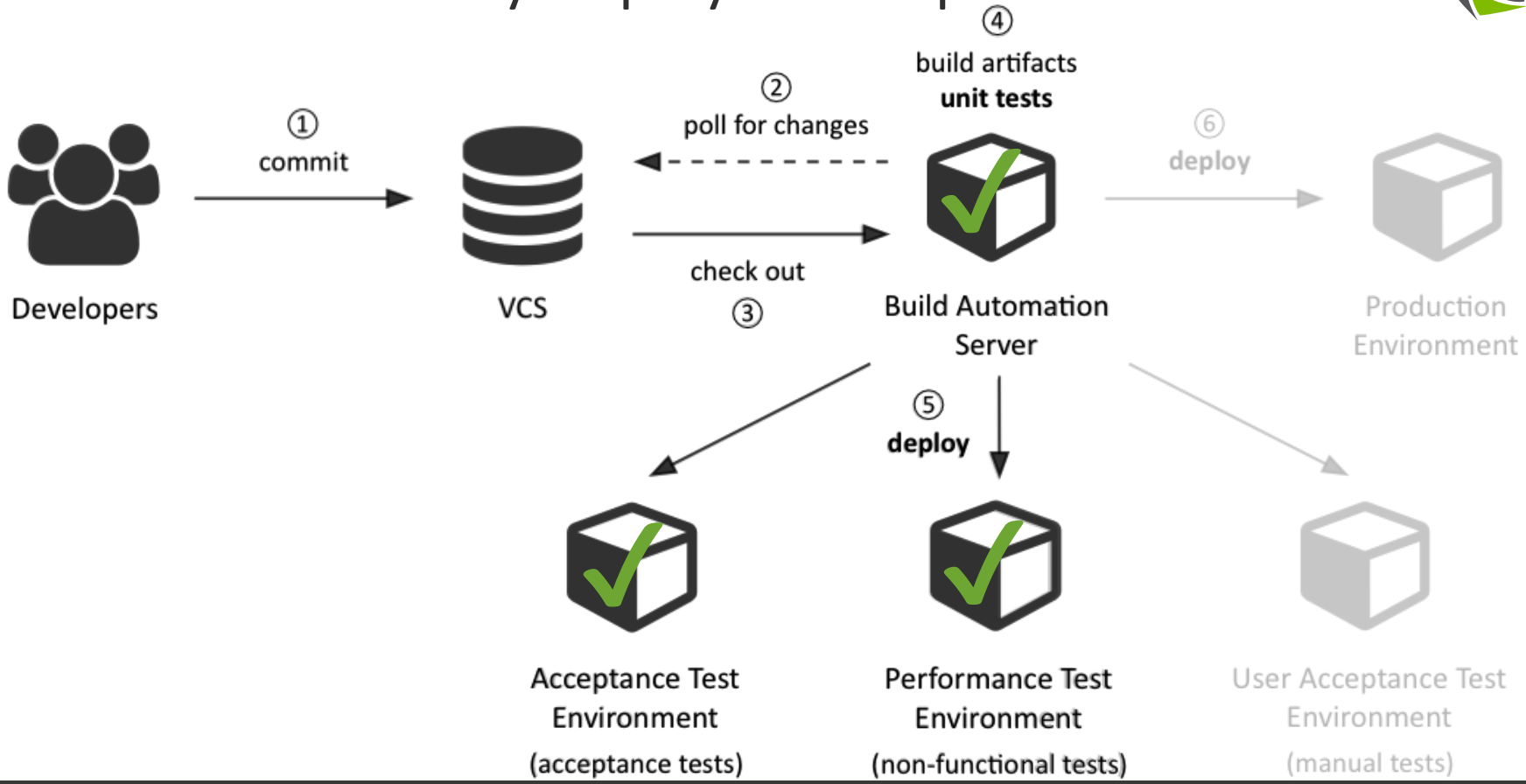

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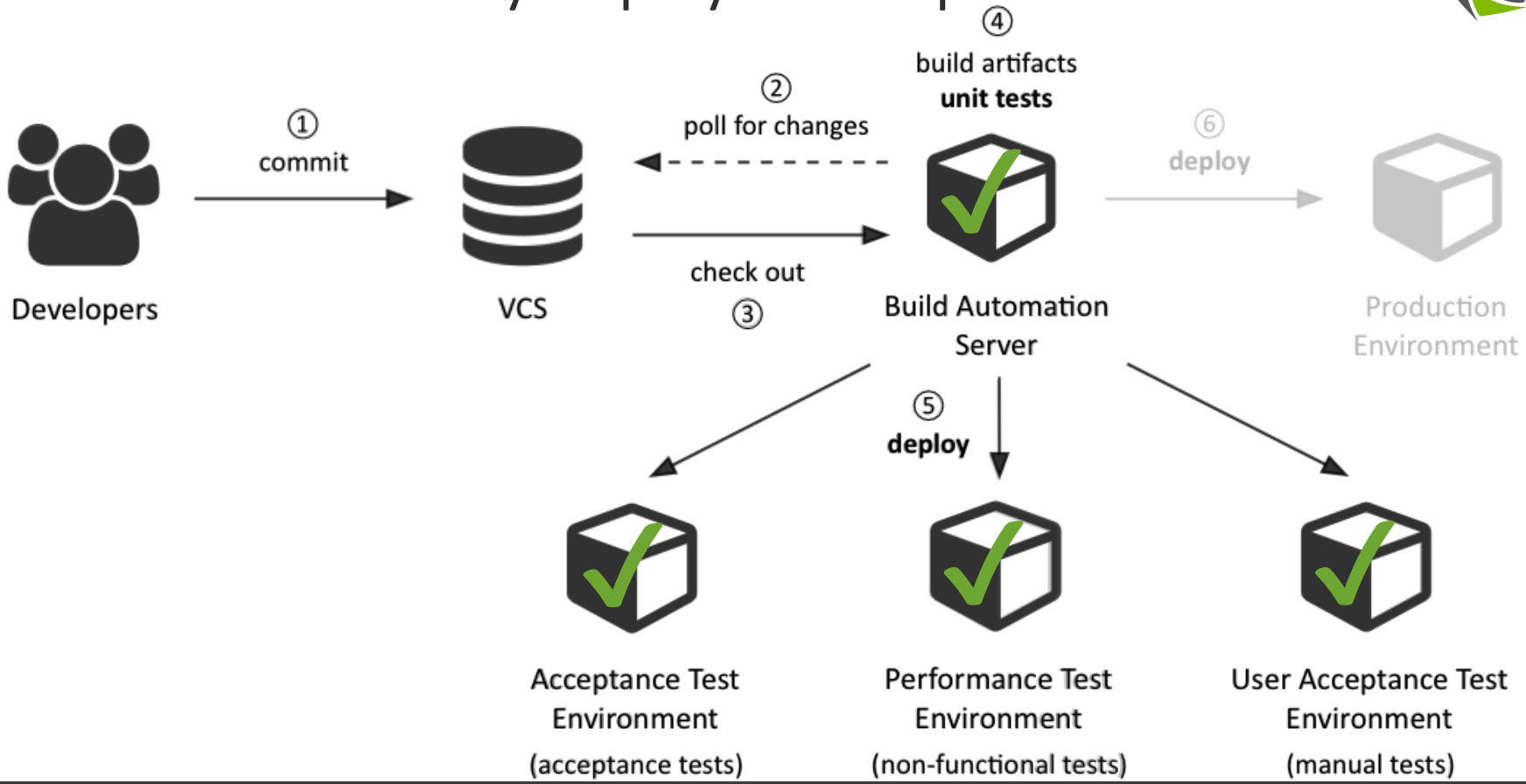

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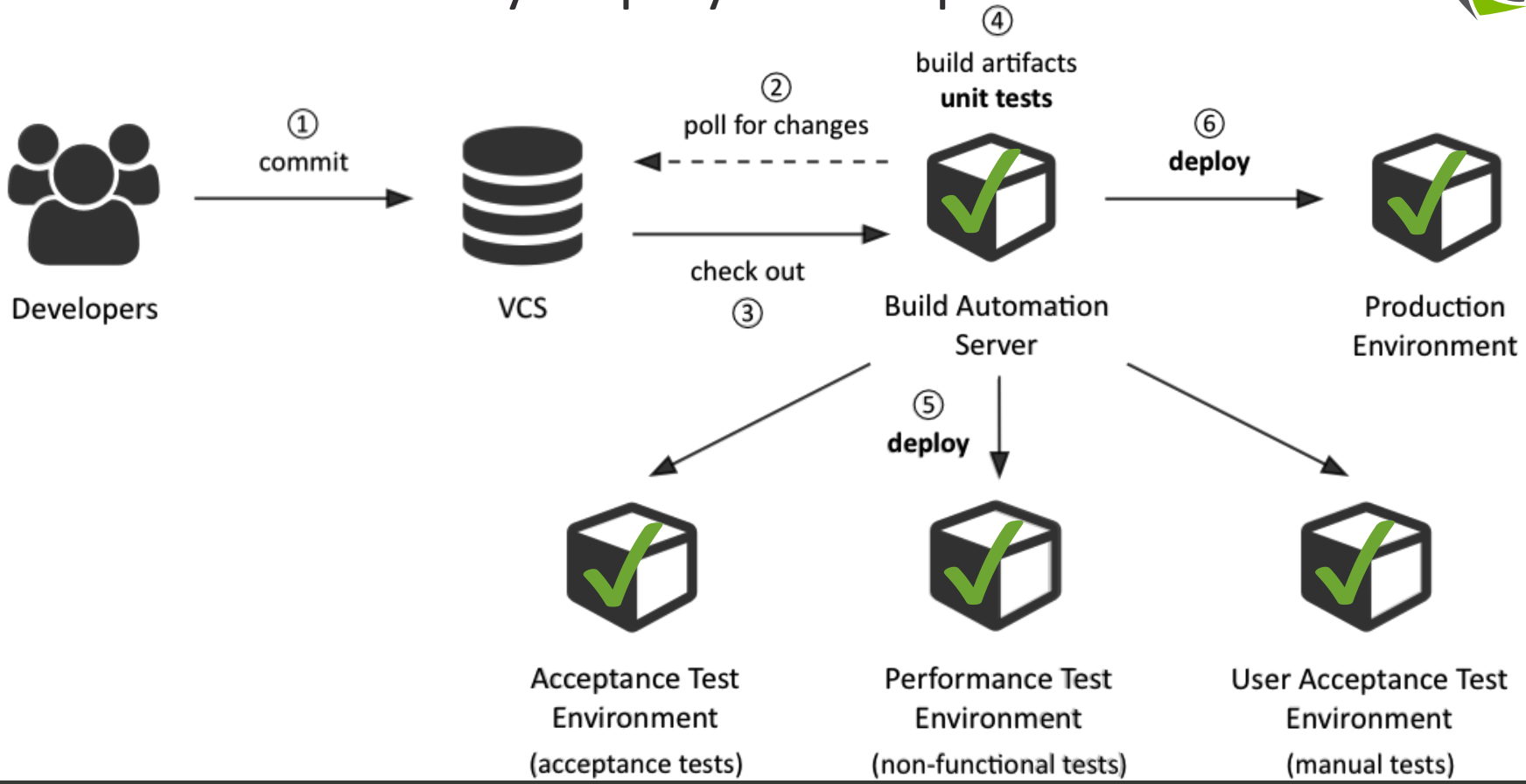


Automated Deployments

Why?

- Create application runtime environments **on demand**
- **Fast**, **reliable**, **repeatable** and **predictable** outcomes
- **Consistent** environments in staging and production
- Establish **fast feedback loops** you can react upon
- Makes release days **riskless**, almost boring

Repetitive tasks

Solve problems and be creative!

“Use machines for what they’re good at, use people for what they’re good at.”

Dave Farley at PIPELINE Conference 2014 @vimeo.com/96173993

Automated Deployments

What?

- Operating Systems, Drivers
- Middleware, Databases, etc.
- Applications, Dependencies, Data

} + Configuration

Automated Deployments

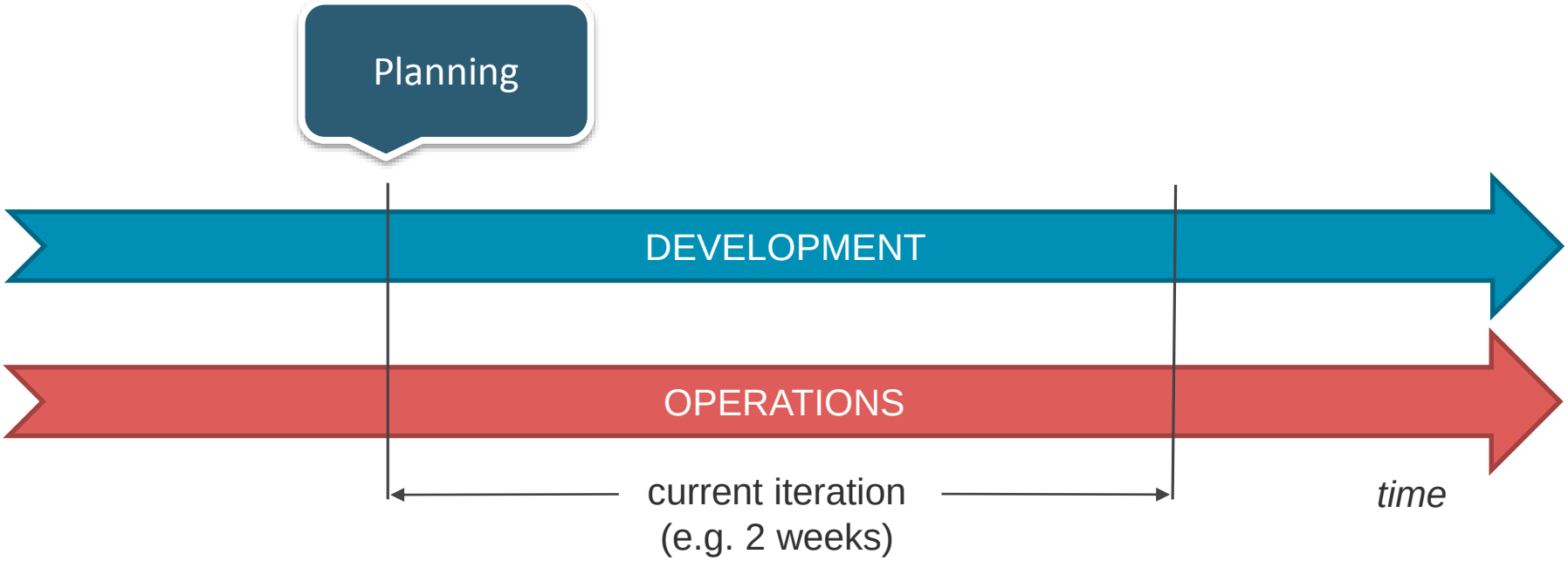
How?

- Infrastructure as Code!
- Keep everything in Version Control
  - Code
  - Configuration
  - Data
- Align **Dev**elopment and **Op**erations

Everything that affects application state

Align Development and Operations

Align Development and Operations



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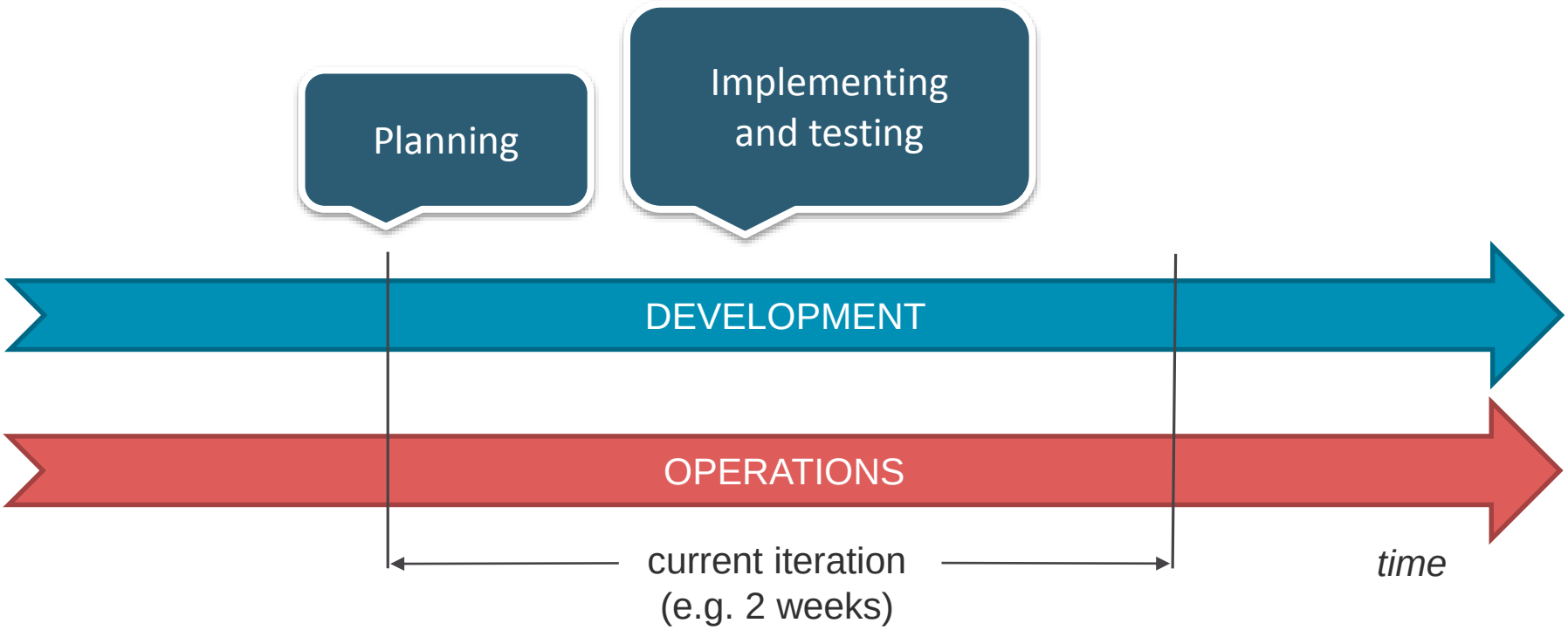

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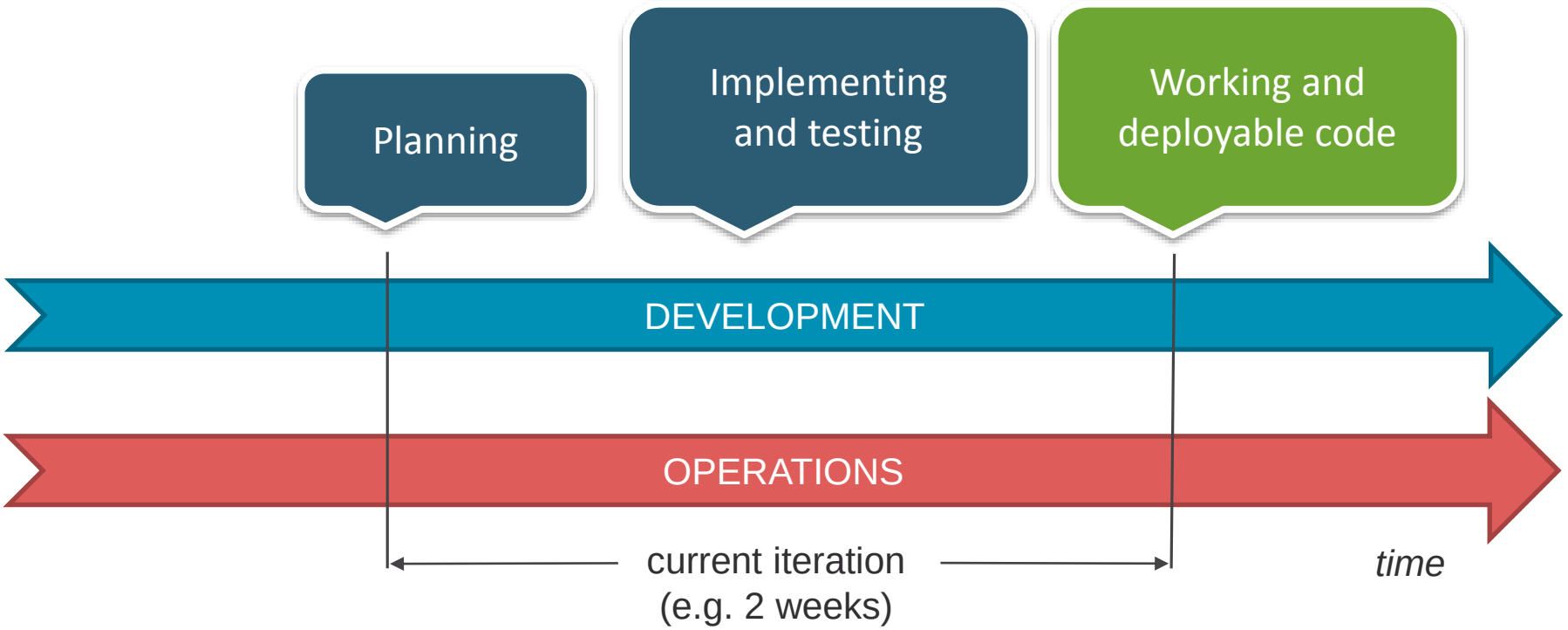


“Enable the reconstruction of the business from nothing but a source code repository, an application data backup, and bare metal resources.”

Adam Jacob, CTO of Opscode

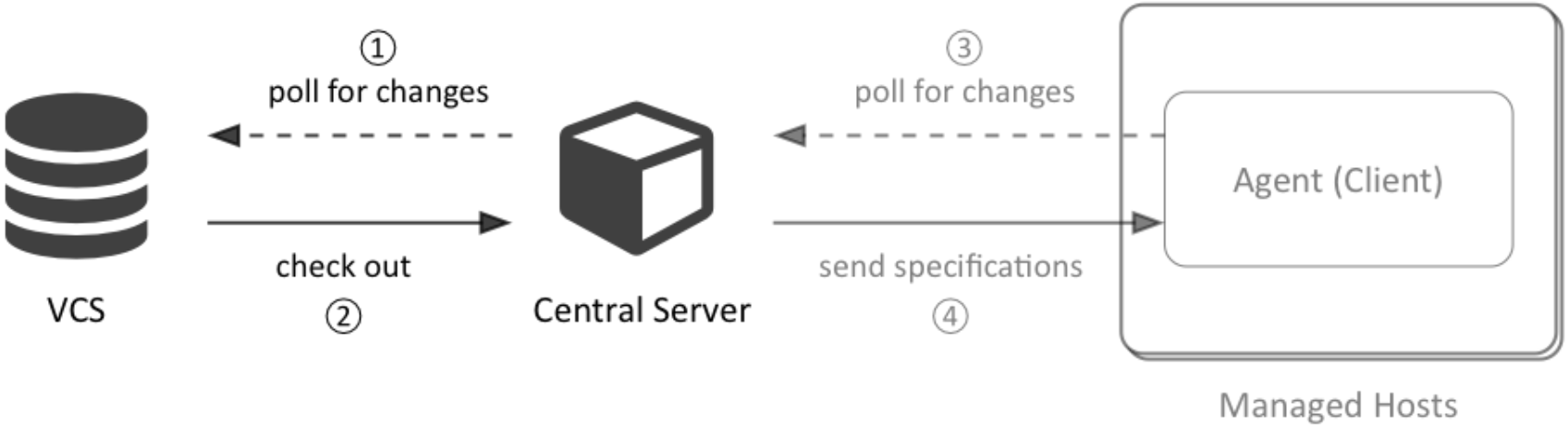
Solutions

Architectural Comparison

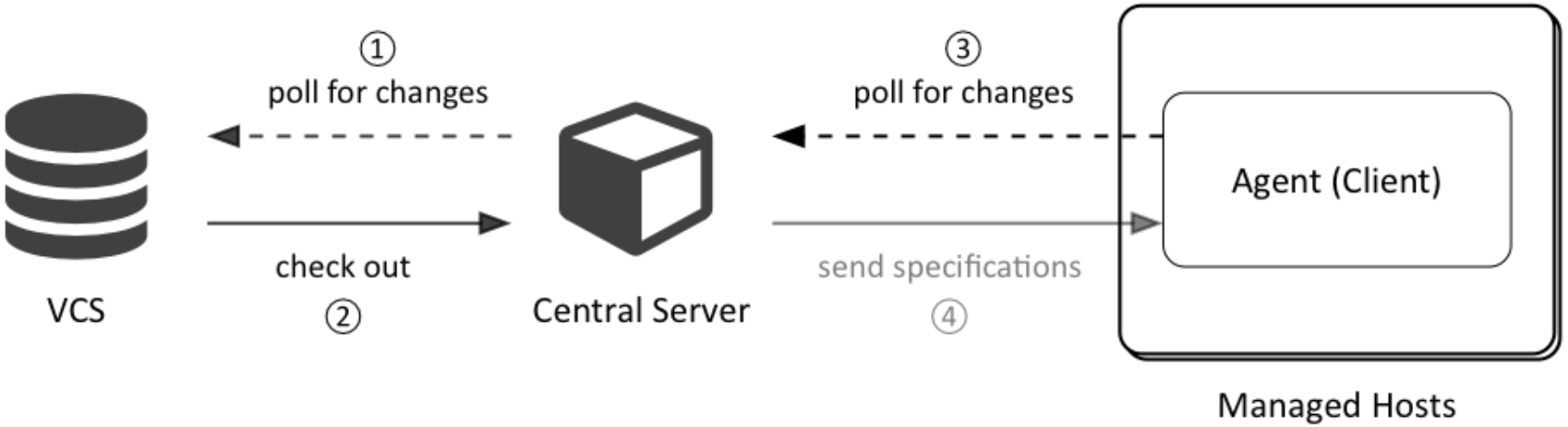
Agent-Based Architectures

Examples: Chef, Puppet

Agent-Based Architectures



Agent-Based Architectures



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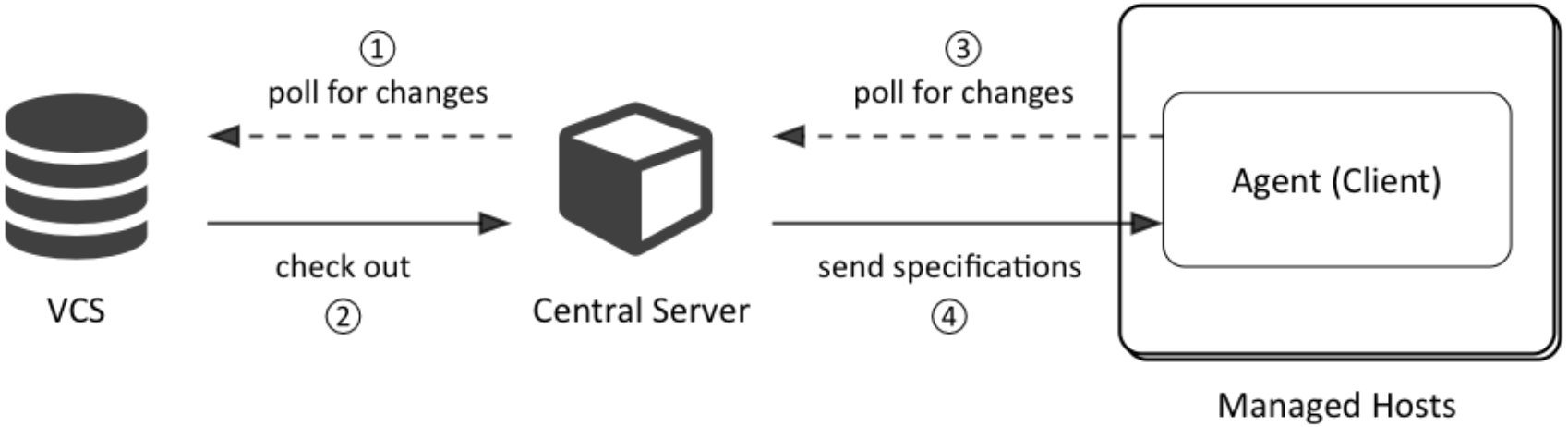
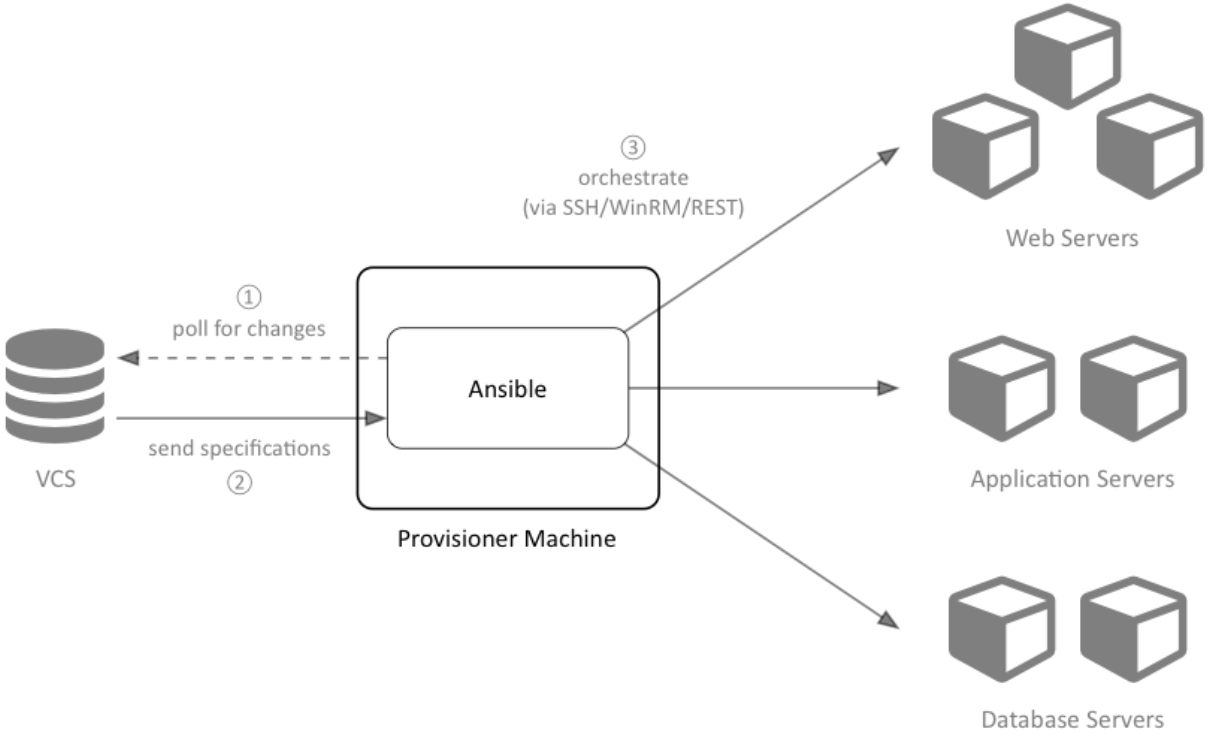


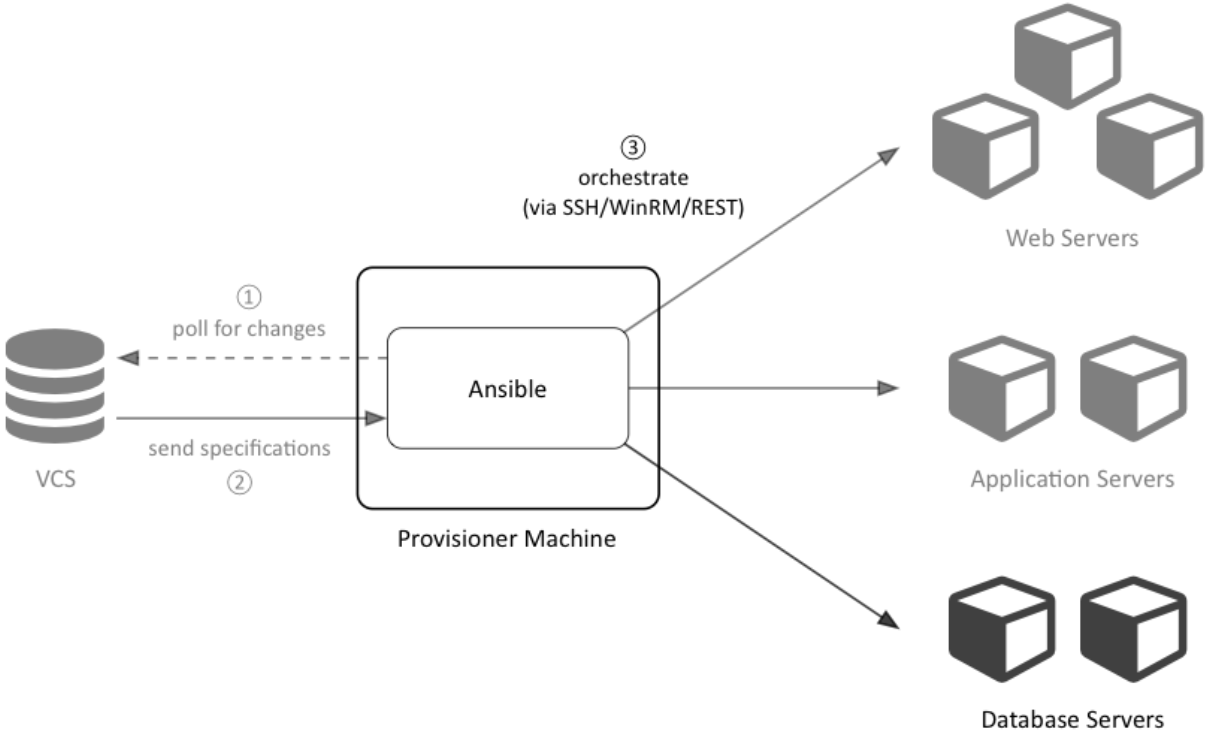
Agentless Architectures

Examples: Ansible

Ansible’s Agentless Architecture



Ansible’s Agentless Architecture



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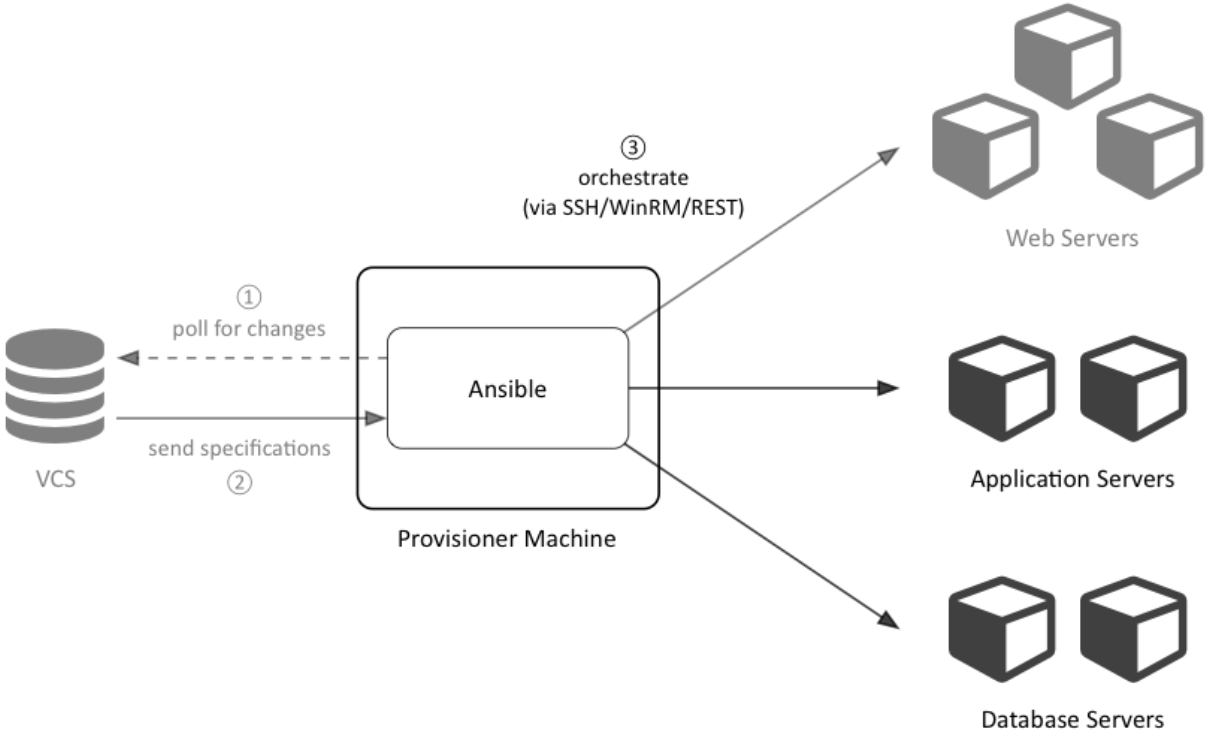
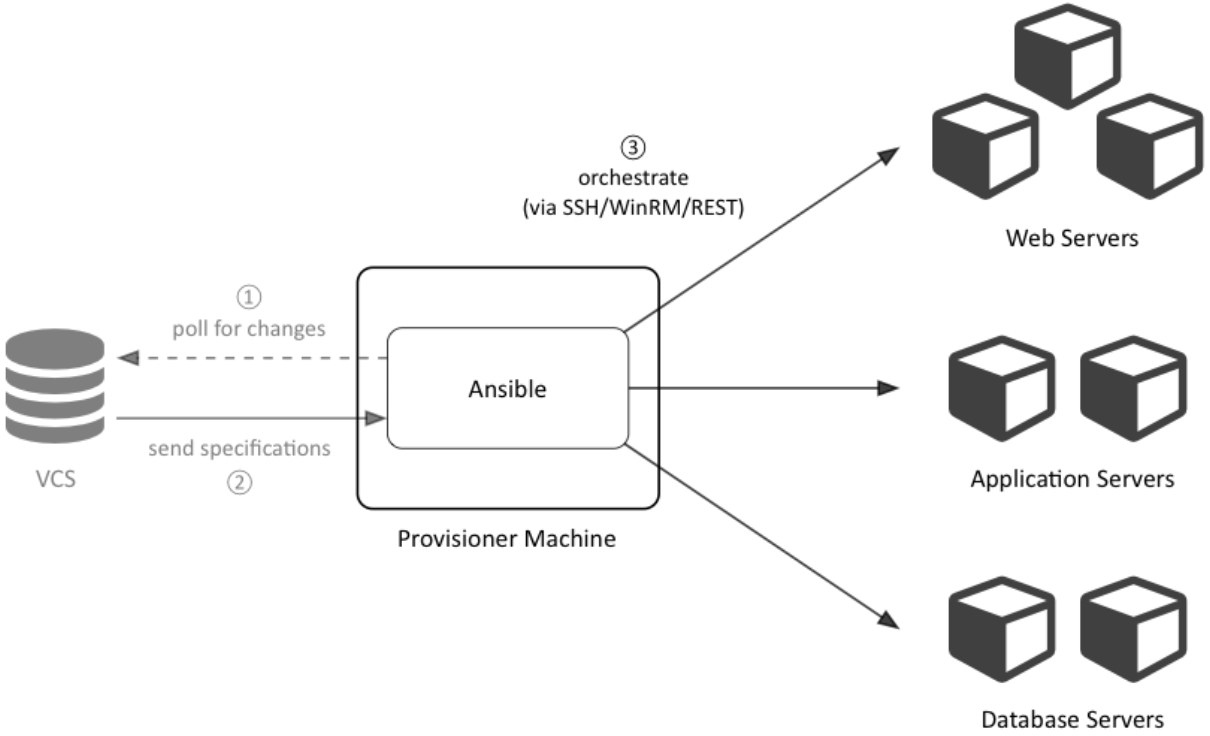


Ansible’s Agentless Architecture



Ansible is an Orchestration Engine

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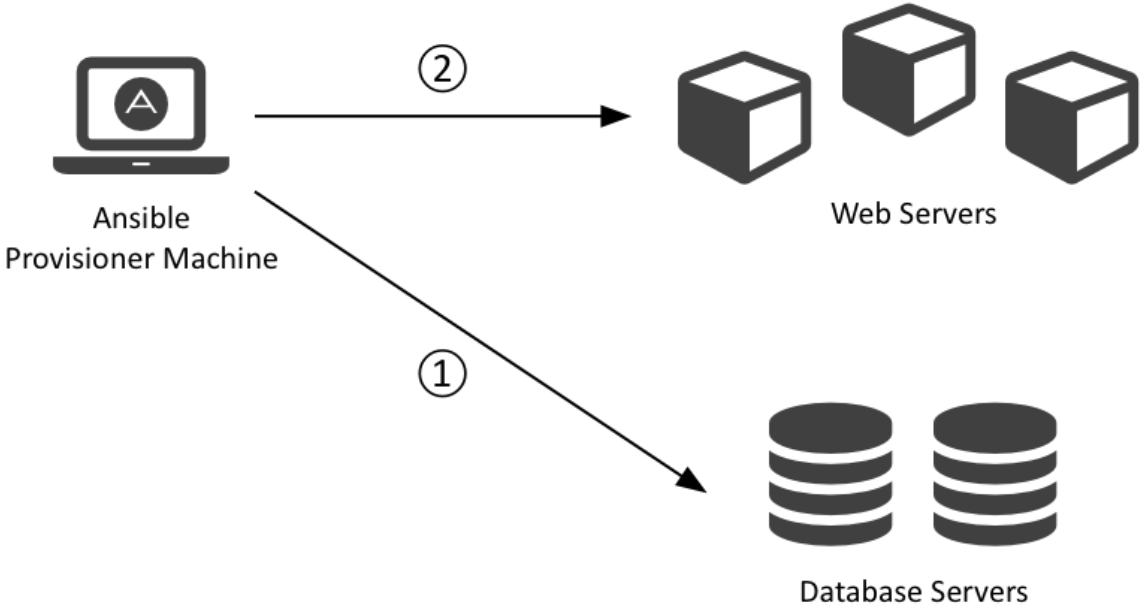

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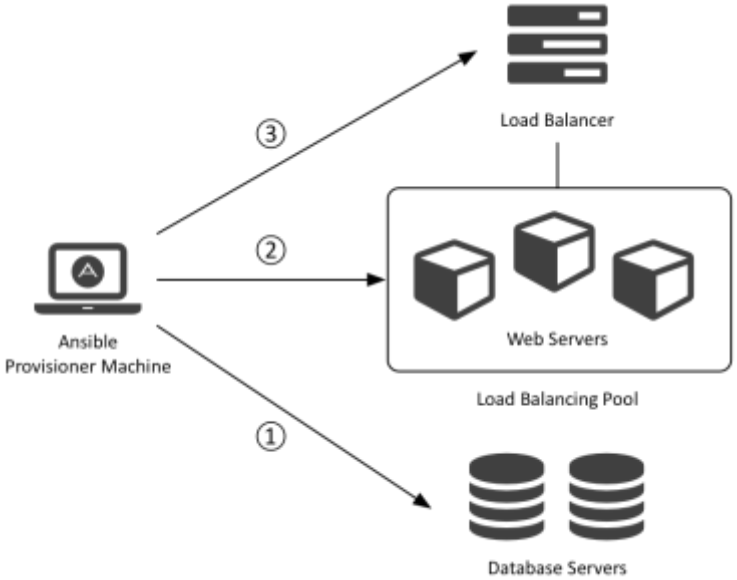

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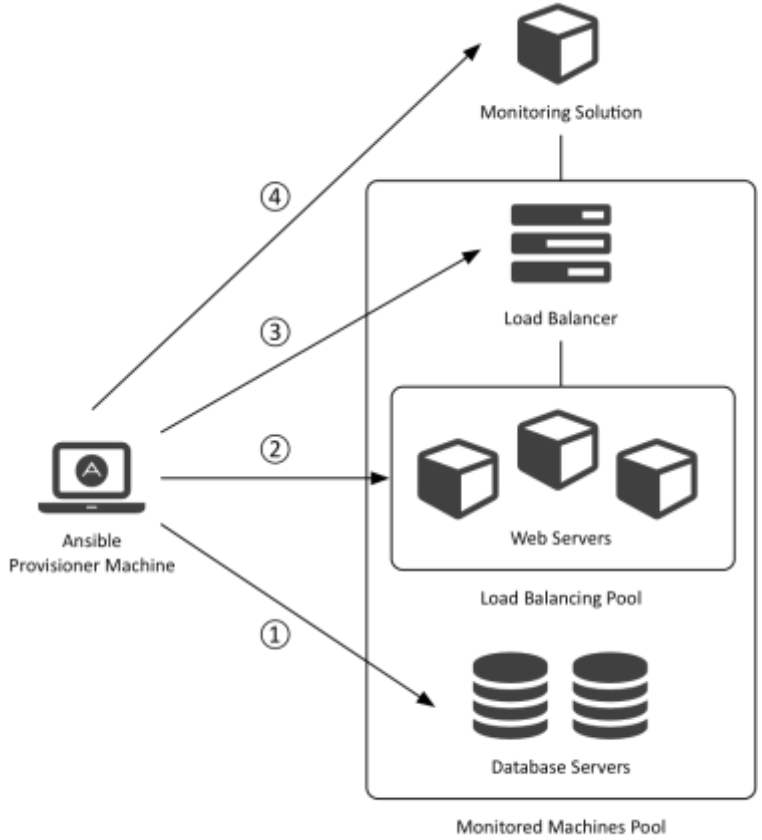

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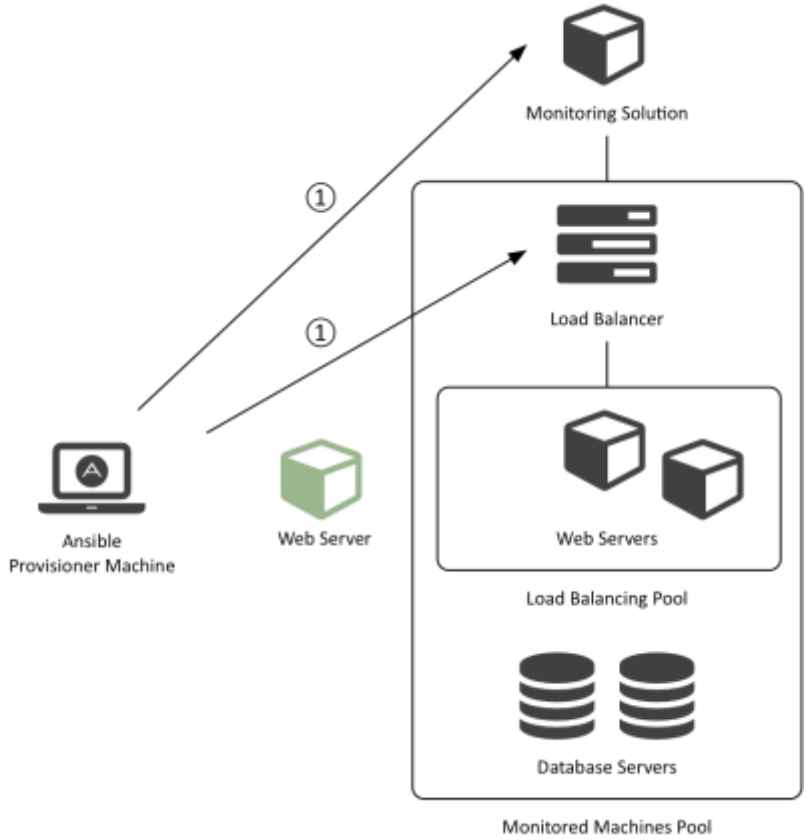

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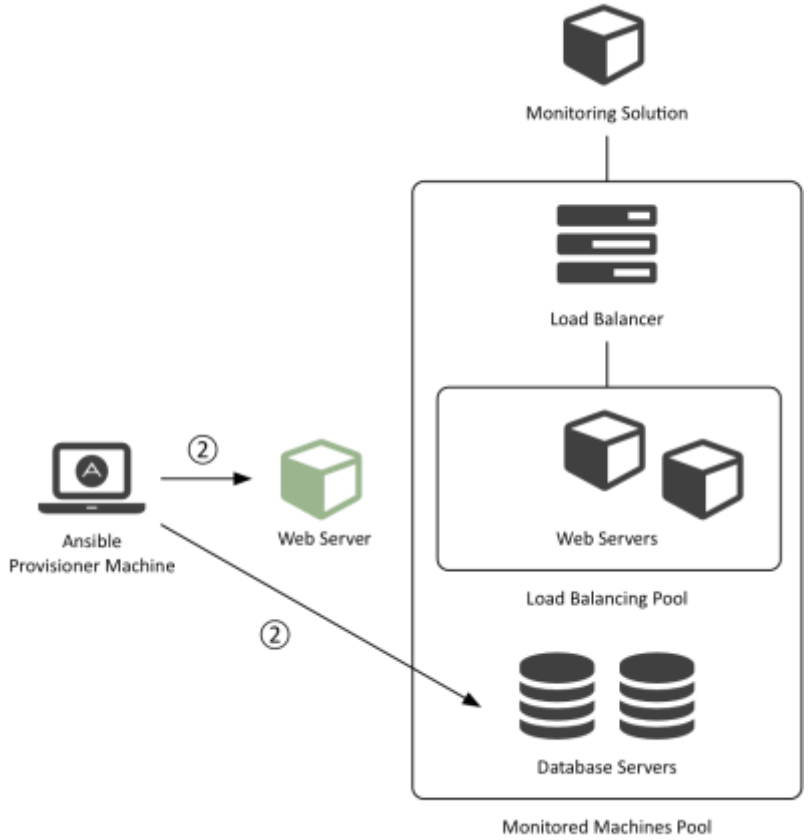

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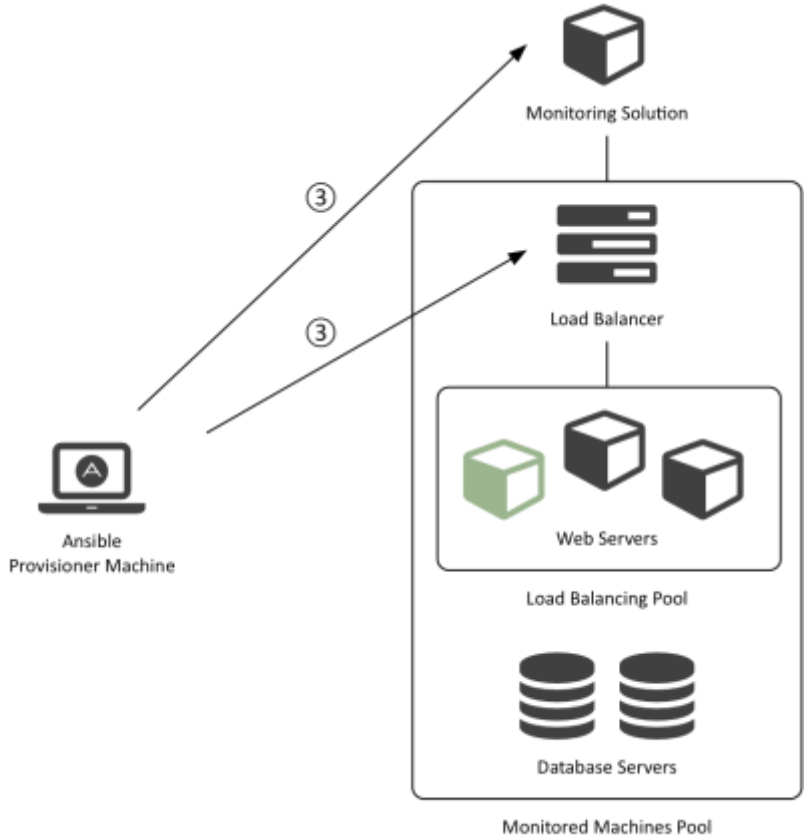
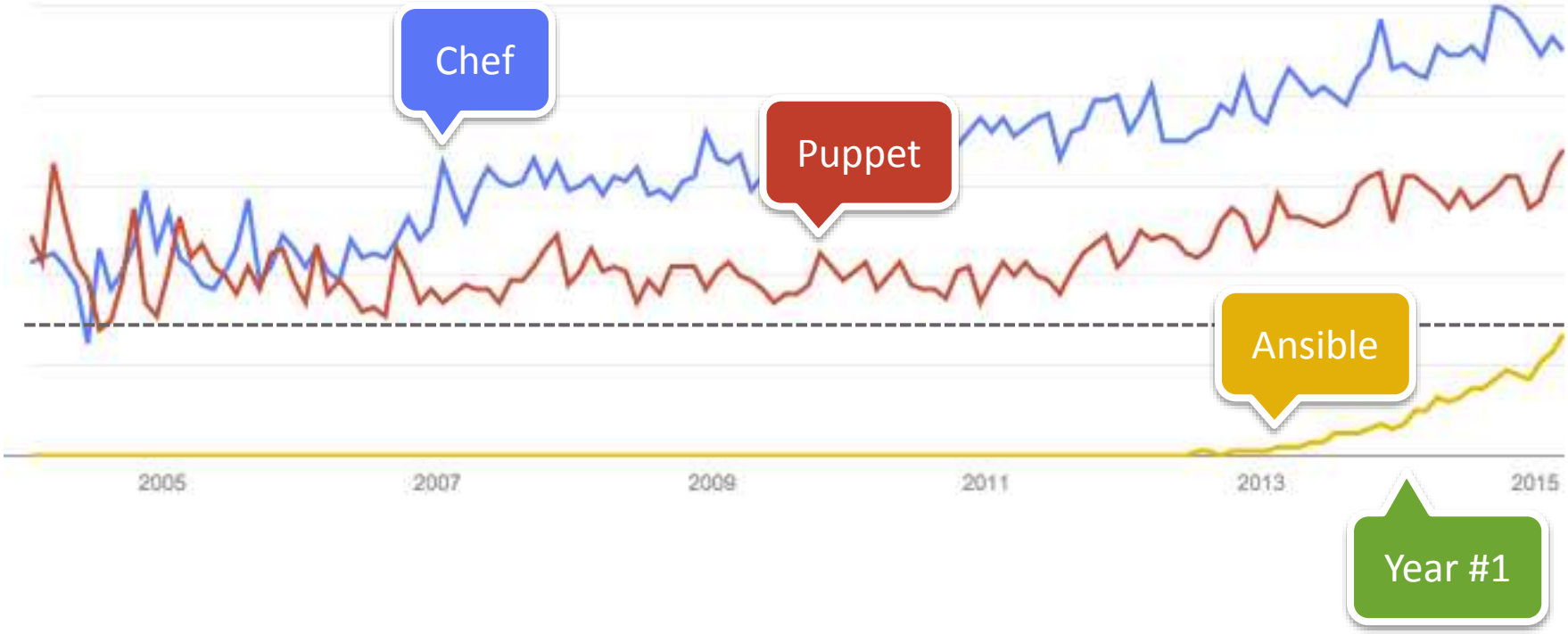


What about Demand?

Global Google Trends: Chef vs. Puppet vs. Ansible



Ansible: Recap of 2014 (first full year of sales)

- Named #1 to watch in 2015 by SD Times
- Named a Top 10 open source project by Red Hat's opensource.com
- > 1 Million Downloads
- > 40 dedicated Ansible meetups (happen regularly)
- > 300 customers across all verticals (Ansible Tower)
- > 900 contributors on GitHub (one of GitHub's most active projects)
- AnsibleFest conferences in San Francisco, Austin & New York
- "Ansible: Up and Running" book preview released by O'Reilly


How Twitter Uses Ansible
ANSIBLE
NYC, May 2014
#Ansible at Twitter:
Managing the Flock
Steve Salevan, Twitter
@stevesalevan / https://github.com/ssalevan

Dynatrace Automated Deployments. So what?

- They integrate nicely into your automated processes!
  - Automated Deployments
  - Configuration Management
  - Immutable Infrastructure

Agents, Collectors, Servers, Clients, etc. with either of Chef, Puppet or Ansible

- Ansible inside the Dynatrace SaaS Orchestration Platform
- Whether on-prem or SaaS: automatically tested

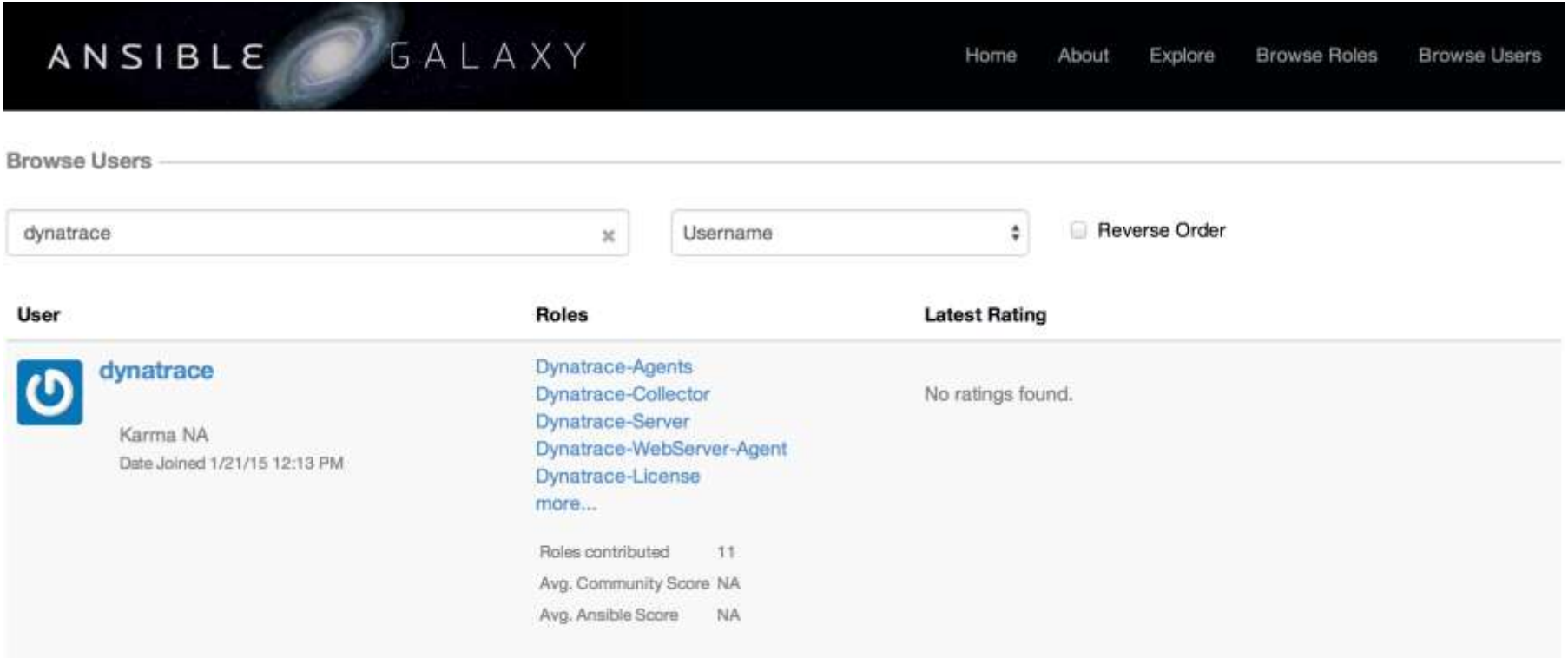
What’s the Status?

Automated Deployments: What's the Status?

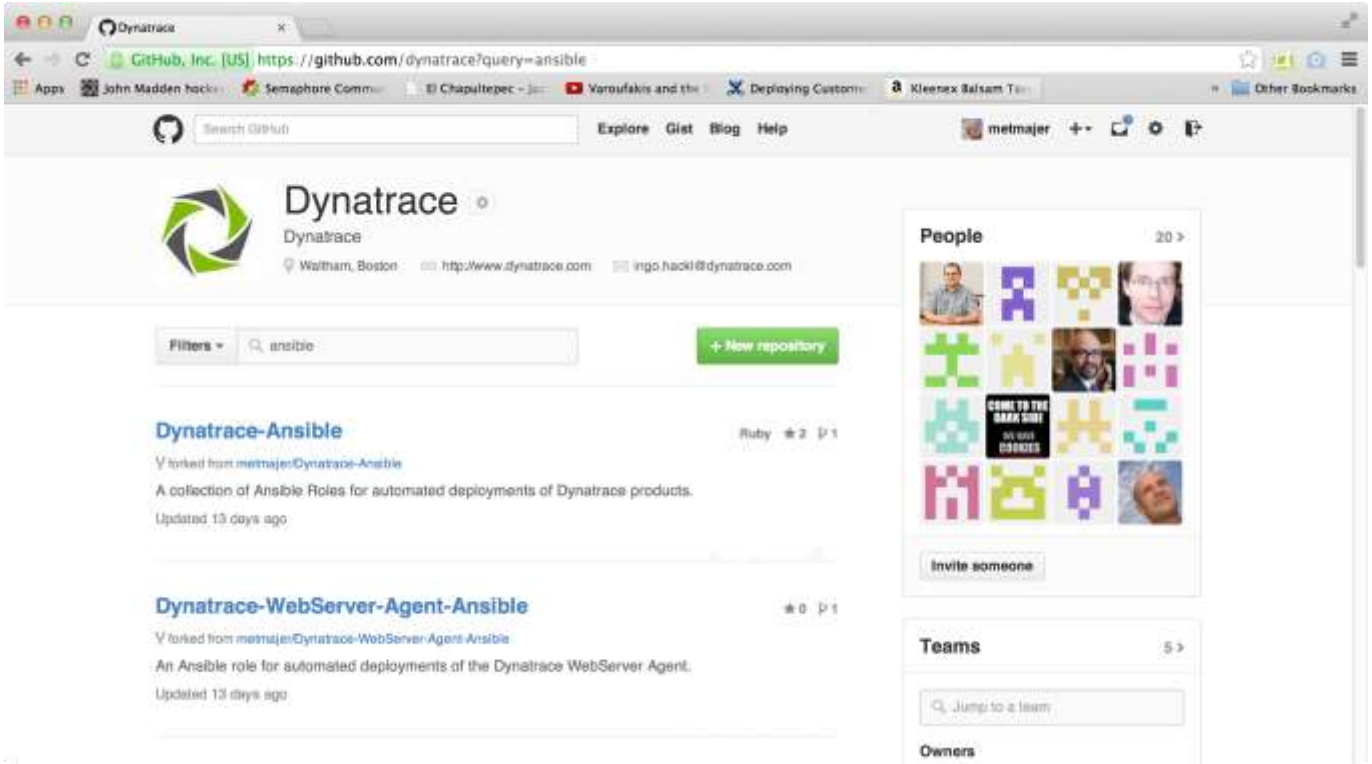
Ansible Roles

- Dynatrace installations ✓
  - Client, Server, Collector, Agents ✓
  - Fix Packs, Plugins, Licenses ✓
- Dynatrace Agent injections ✓
- Platforms: Linux ✓ Windows ✓ (soon)
- Soon to come: Agent Groups, PWH Connectivity, etc.

Ansible Galaxy



Dynatrace GitHub Organization



Automated Deployments: What's the Status?

Chef Cookbook

- Customers have provided their own implementions
- We will clean them up and open-source them soon

Puppet Module

- Being developed in-house in our Linz lab

Introduction to Ansible Concepts

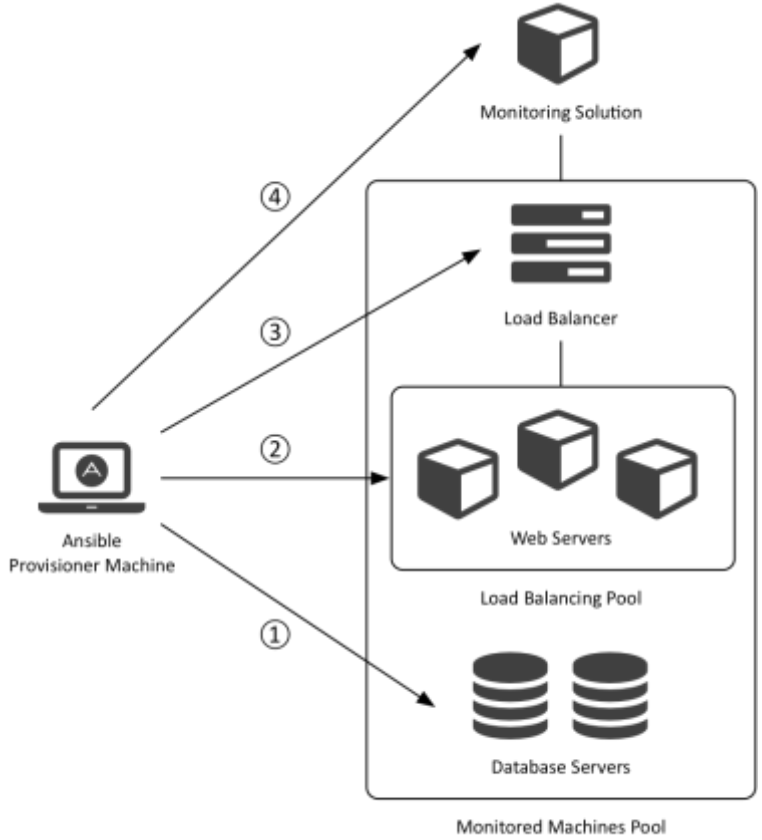
Ansible Concepts: Inventories

Ansible Concepts: Inventories

Specify the environment Ansible operates in.

- Groups and hosts are defined in inventories
- Use inventories for staging and production
- Text files expressed in an INI-like format

Ansible Concepts: Inventories



Ansible Concepts: Inventories

```
# production

[balancers]
www.example.com

[webservers]
www[0-9].example.com

[dbservers]
db[a:f].example.com

[monitoring]
dynatrace.example.com
```

Group

Host

Numeric Range

Alphabetic Range

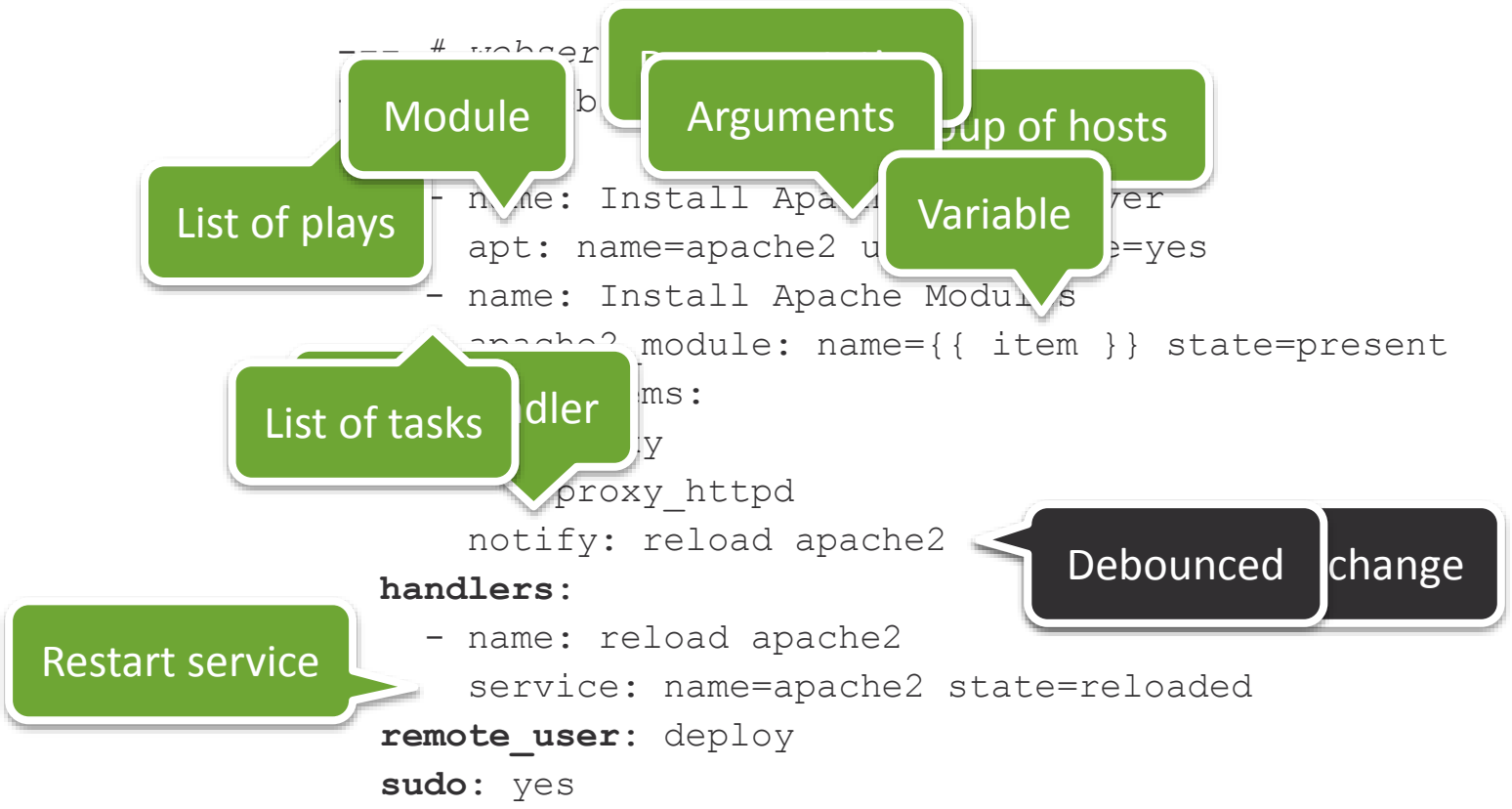
Ansible Concepts: Playbooks

Ansible Concepts: Playbooks

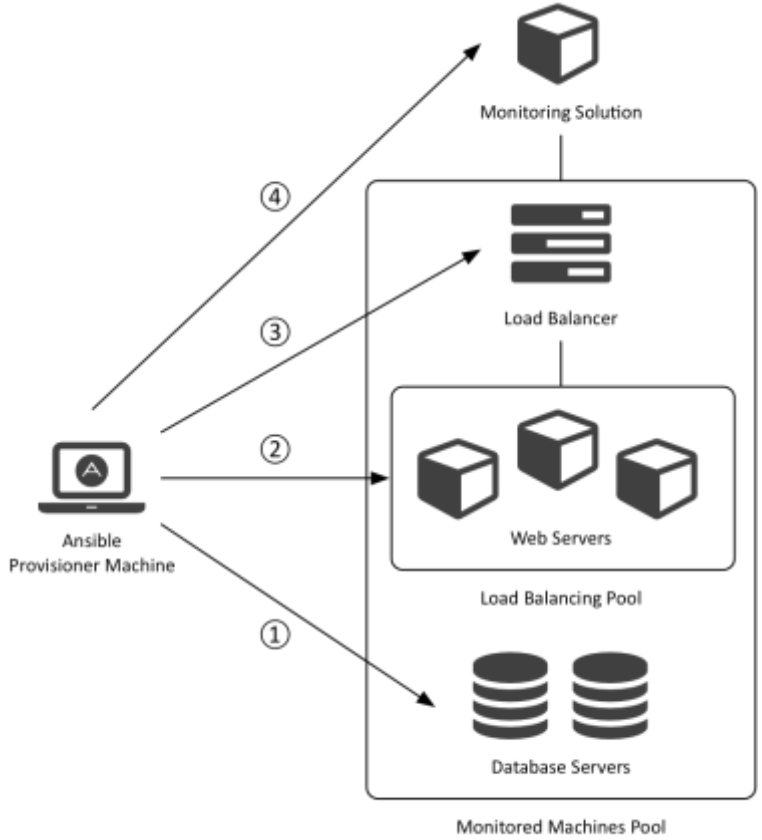
*Defines **sequences** of tasks (Plays) to be executed on a group of hosts.*

- Describes **policies** machines under management shall enforce
- Contains **variables**, **tasks**, **handlers**, **files, templates** and **roles**
- Expressed in **YAML**

Ansible Concepts: Playbooks



Ansible Concepts: Playbooks



Ansible Concepts: Playbooks

One to rule them all

```
--- # playbook.yml
- include: dbservers.yml
- include: webservers.yml
- include: balancers.yml
- include: monitoring.yml
```

Ansible Concepts: Roles

Ansible Concepts: Roles

The best way to organize your playbooks.

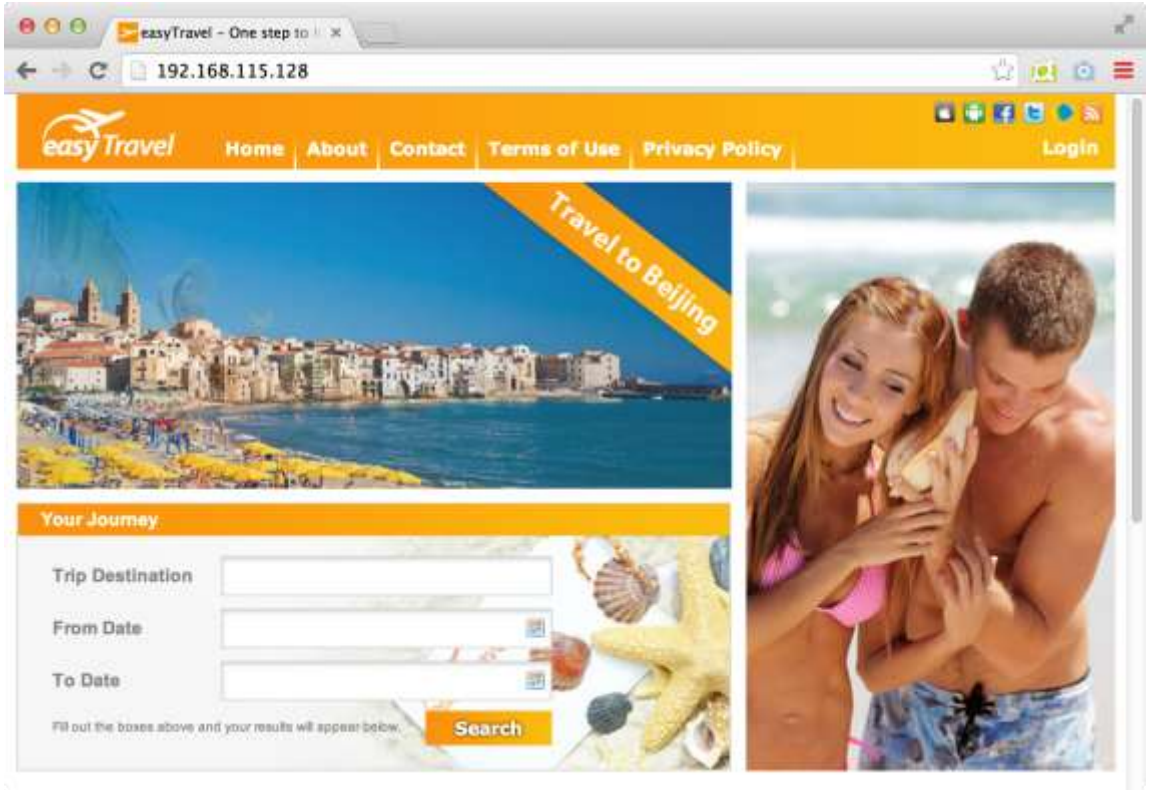
- Structure content into related *vars*, *tasks*, *files*, *handlers*, etc.
- File structure for automated inclusion of role-specific content
- Roles can be shared and pulled from *Ansible Galaxy*, *GitHub*, etc.

Deployment Automation of Dynatrace

with Ansible

in 3 simple steps

Simulated Production Environment: easyTravel



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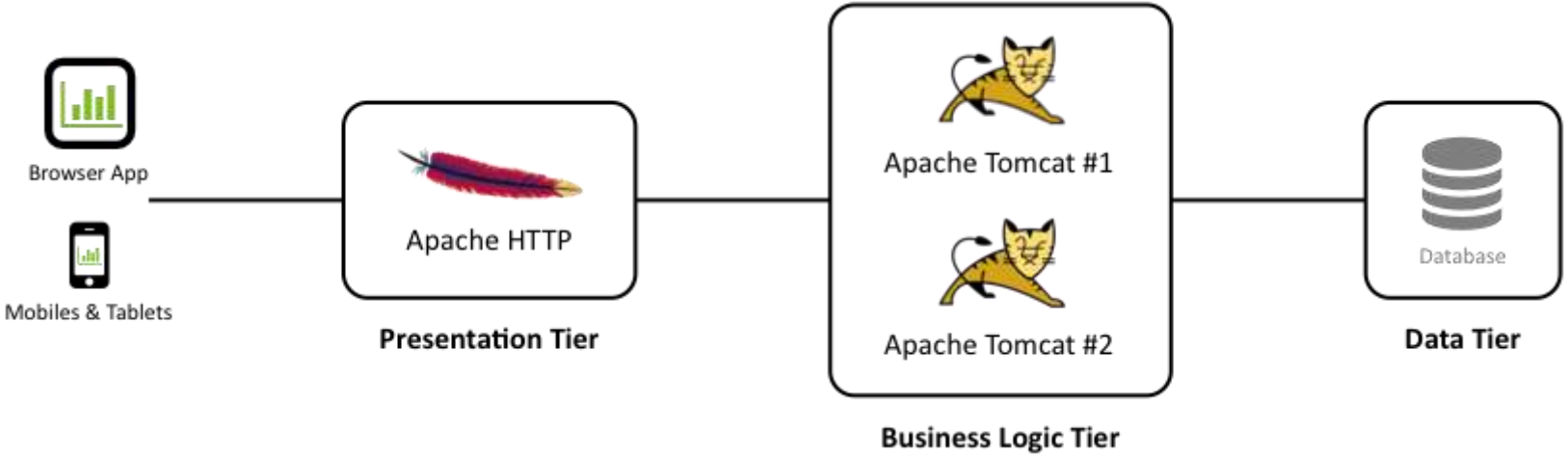
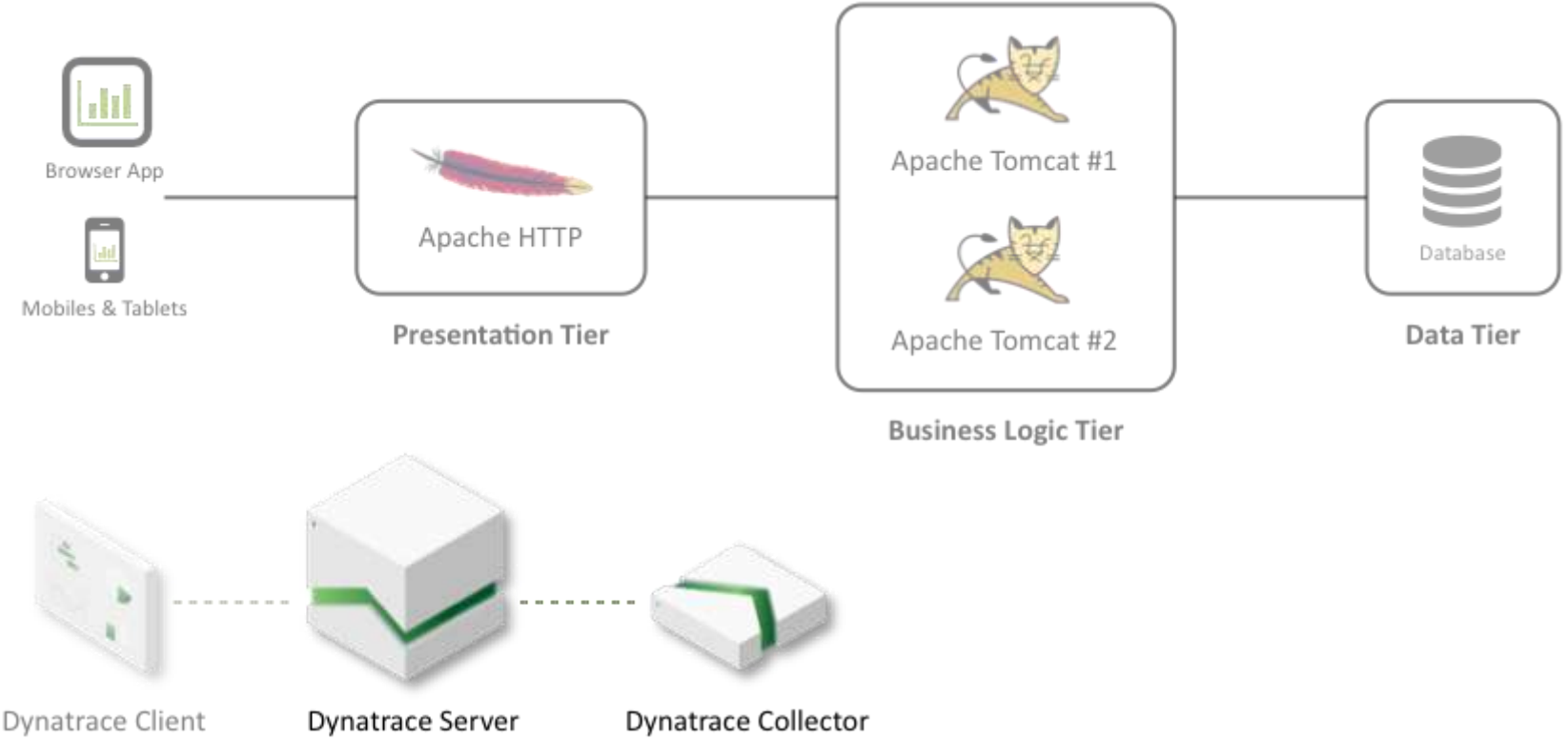
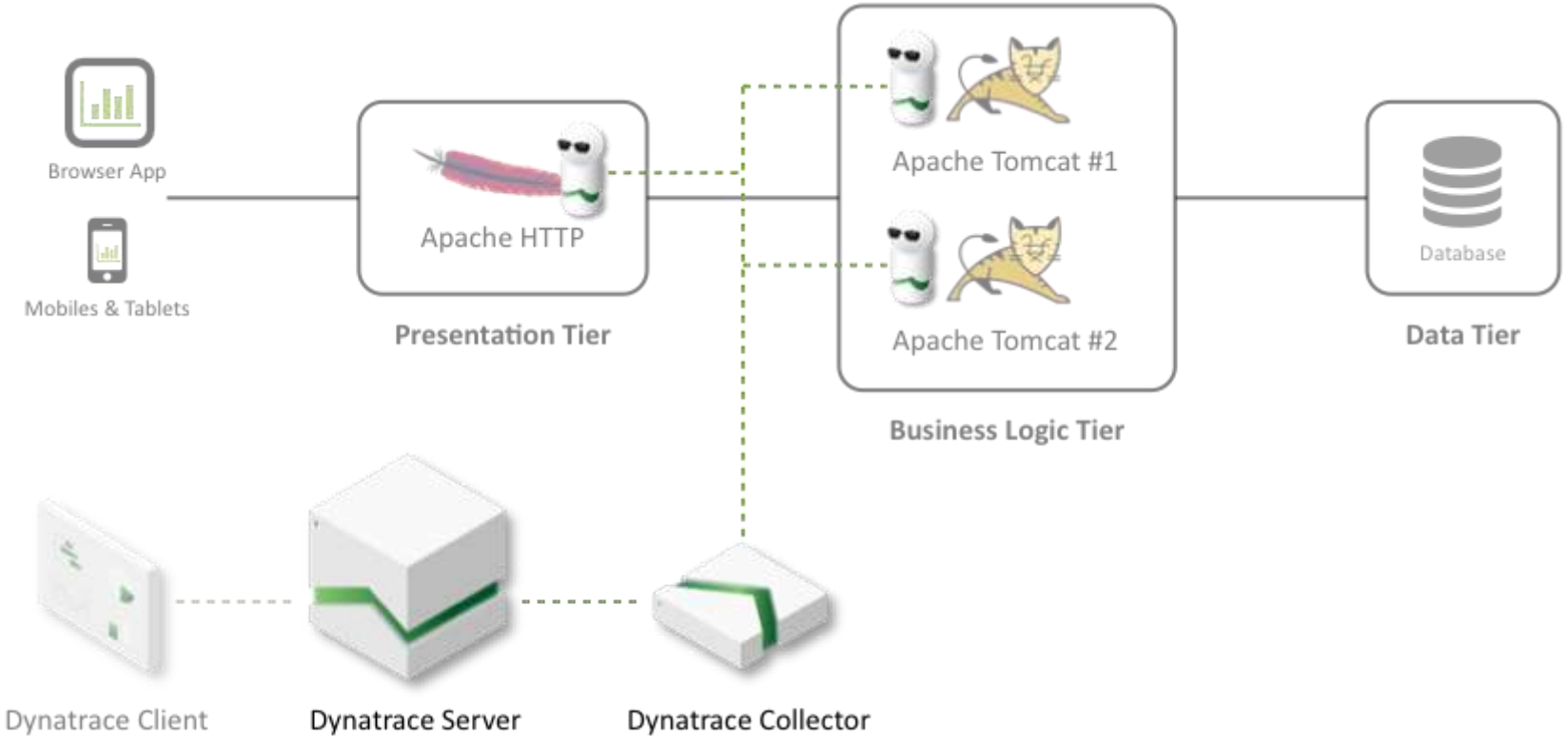


Deployment Scenario I: Install Server & Collector



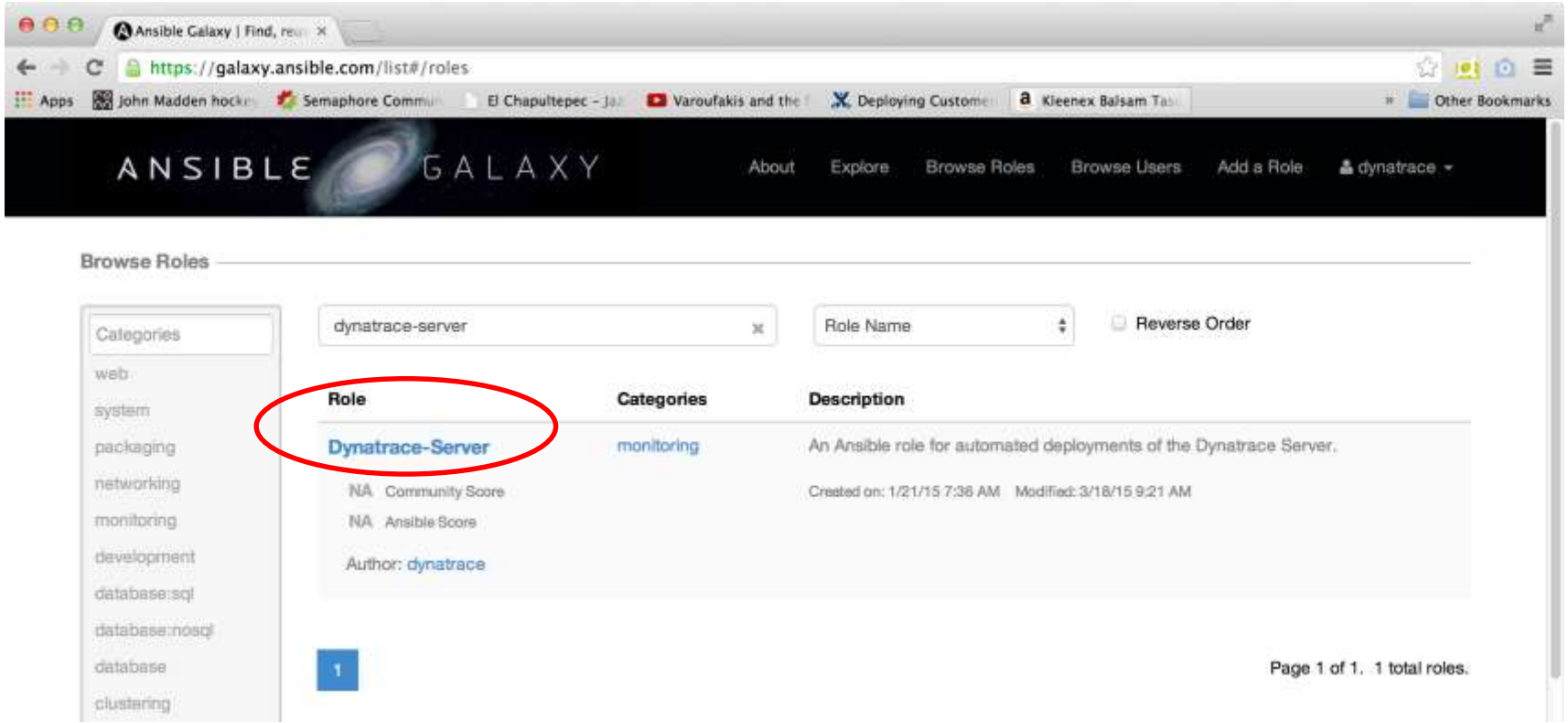
Deployment Scenario II: Inject Agents



Deployment Scenario: Install Server & Collector

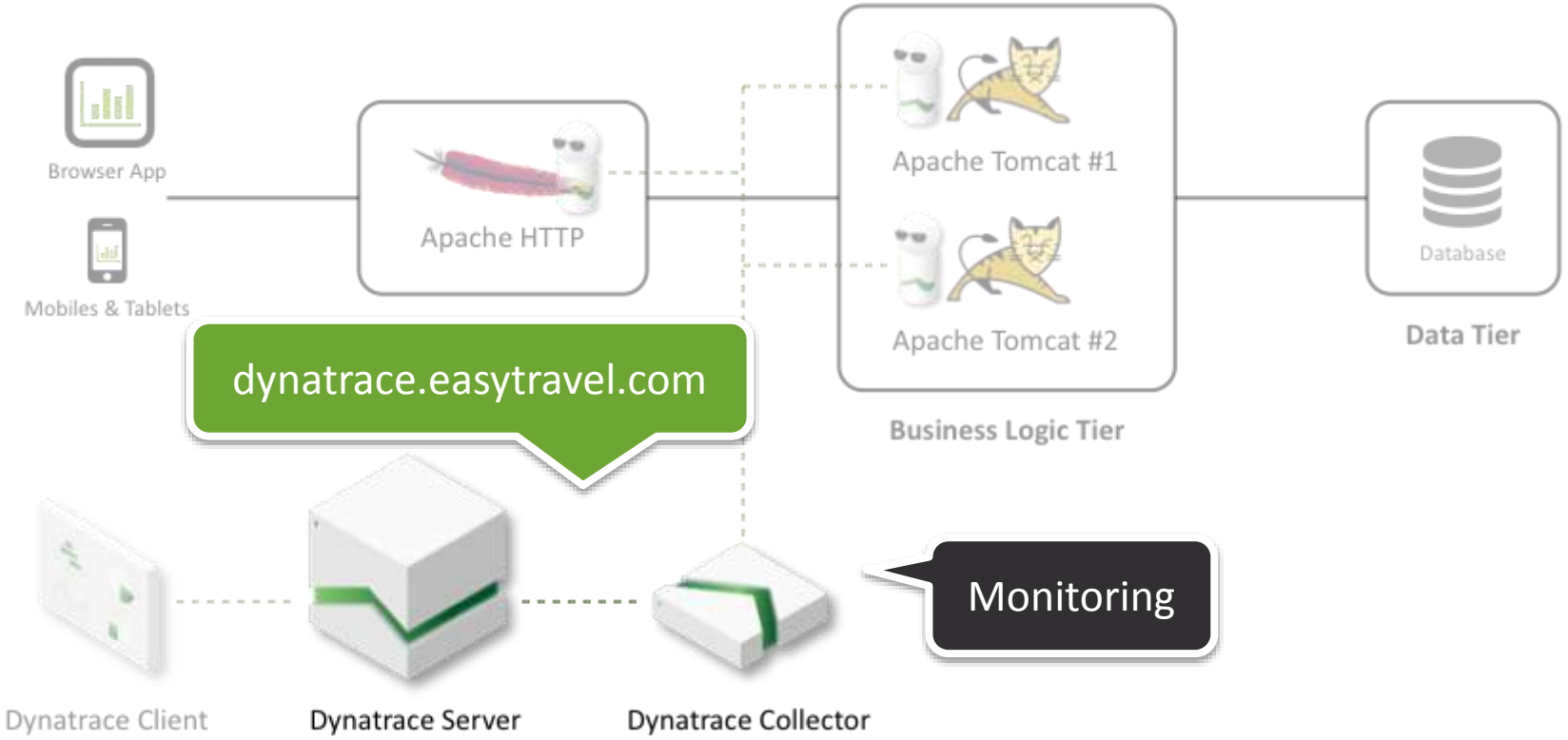
1. Gather Dependencies

Ansible Galaxy: Dynatrace-Server



2. Specify Environment

Identify Hosts

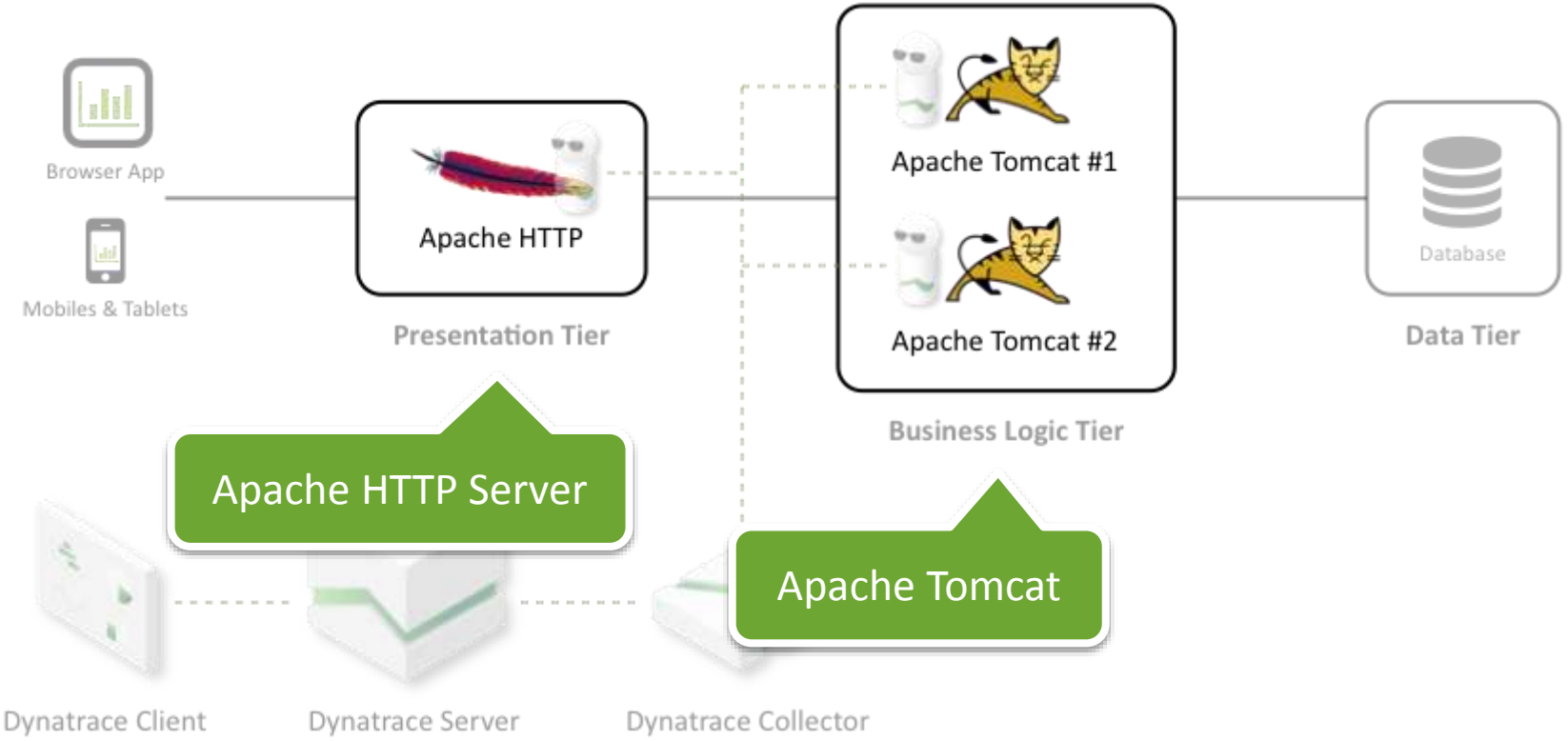


3. Execute Playbook

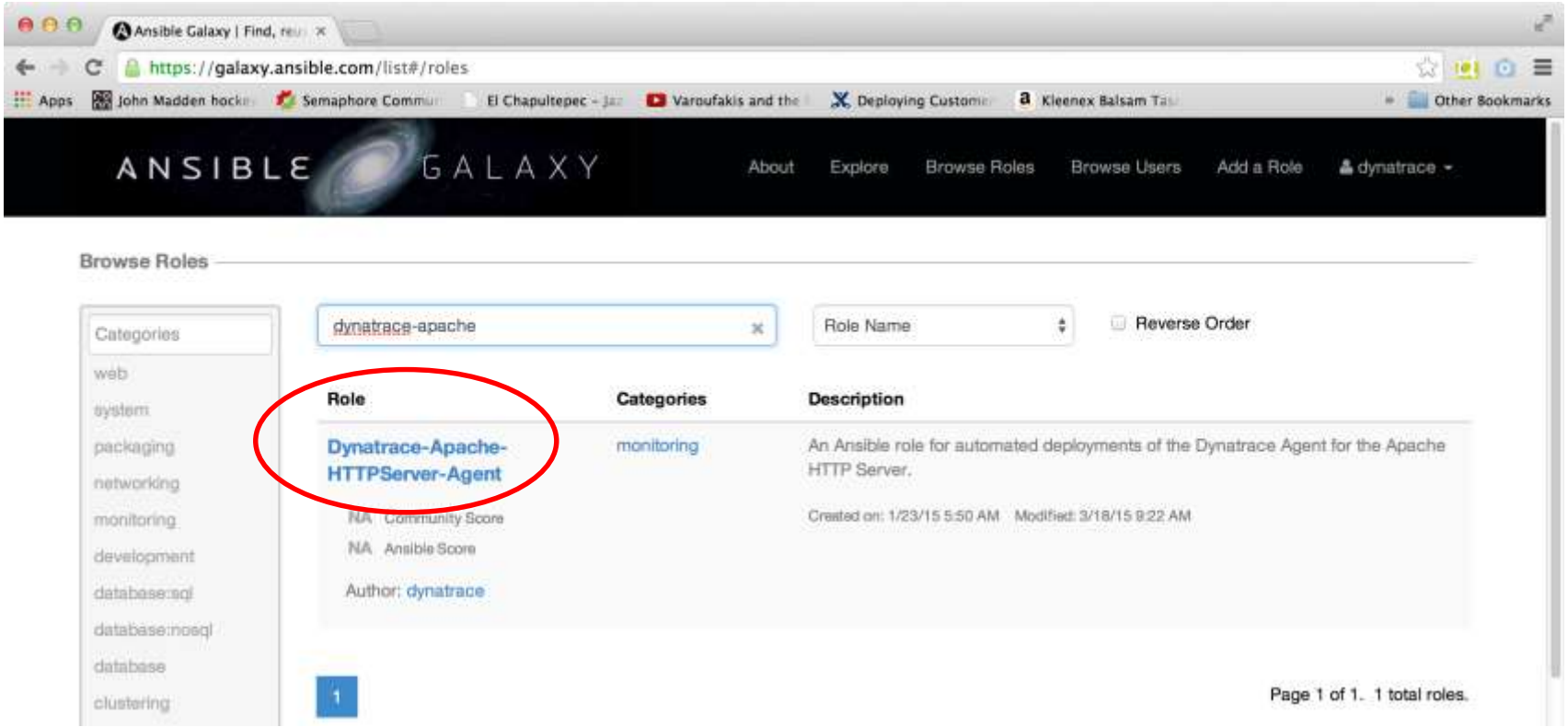
Deployment Scenario: Inject Agents

1. Gather Dependencies

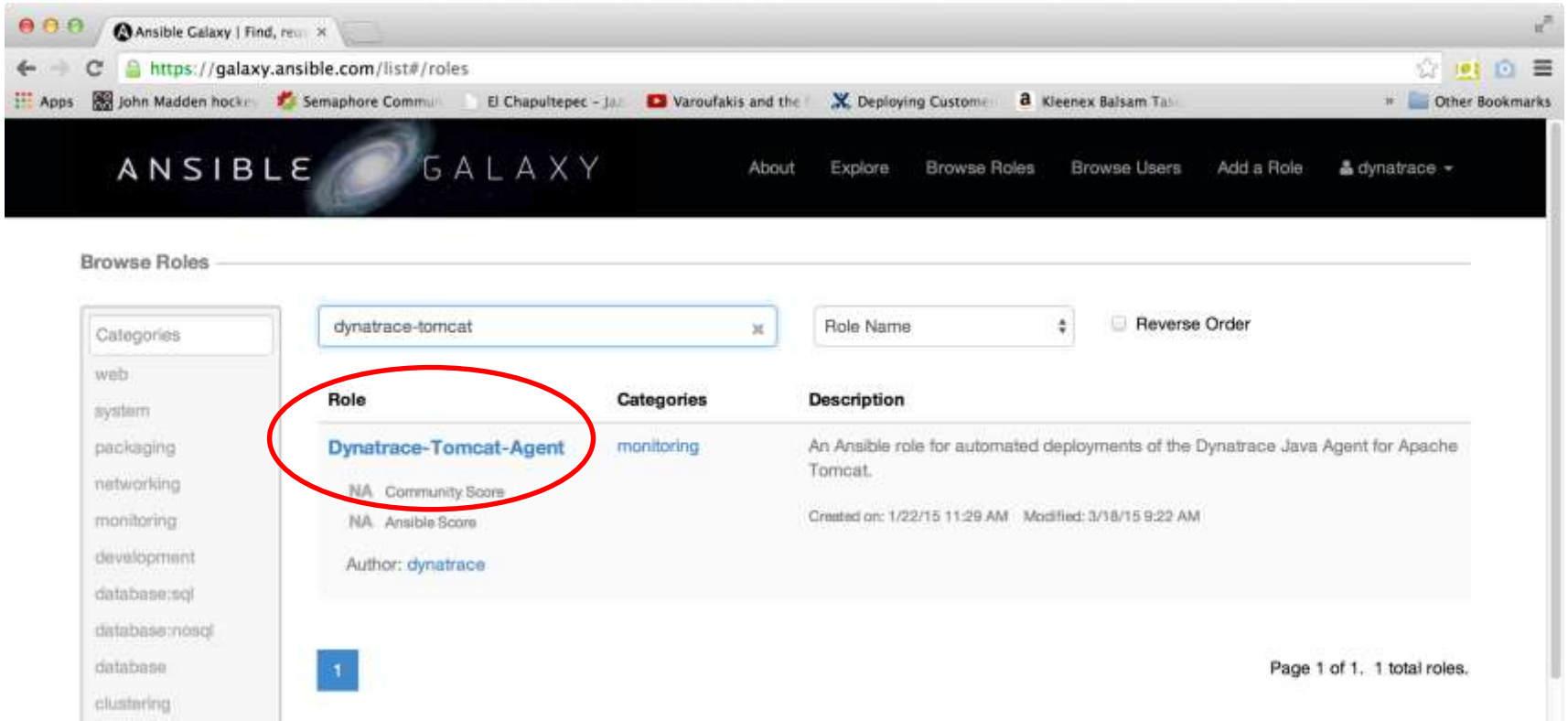
Identify Technologies



Ansible Galaxy: Dynatrace-Apache-HTTPServer-Agent



Ansible Galaxy: Dynatrace-Tomcat-Agent



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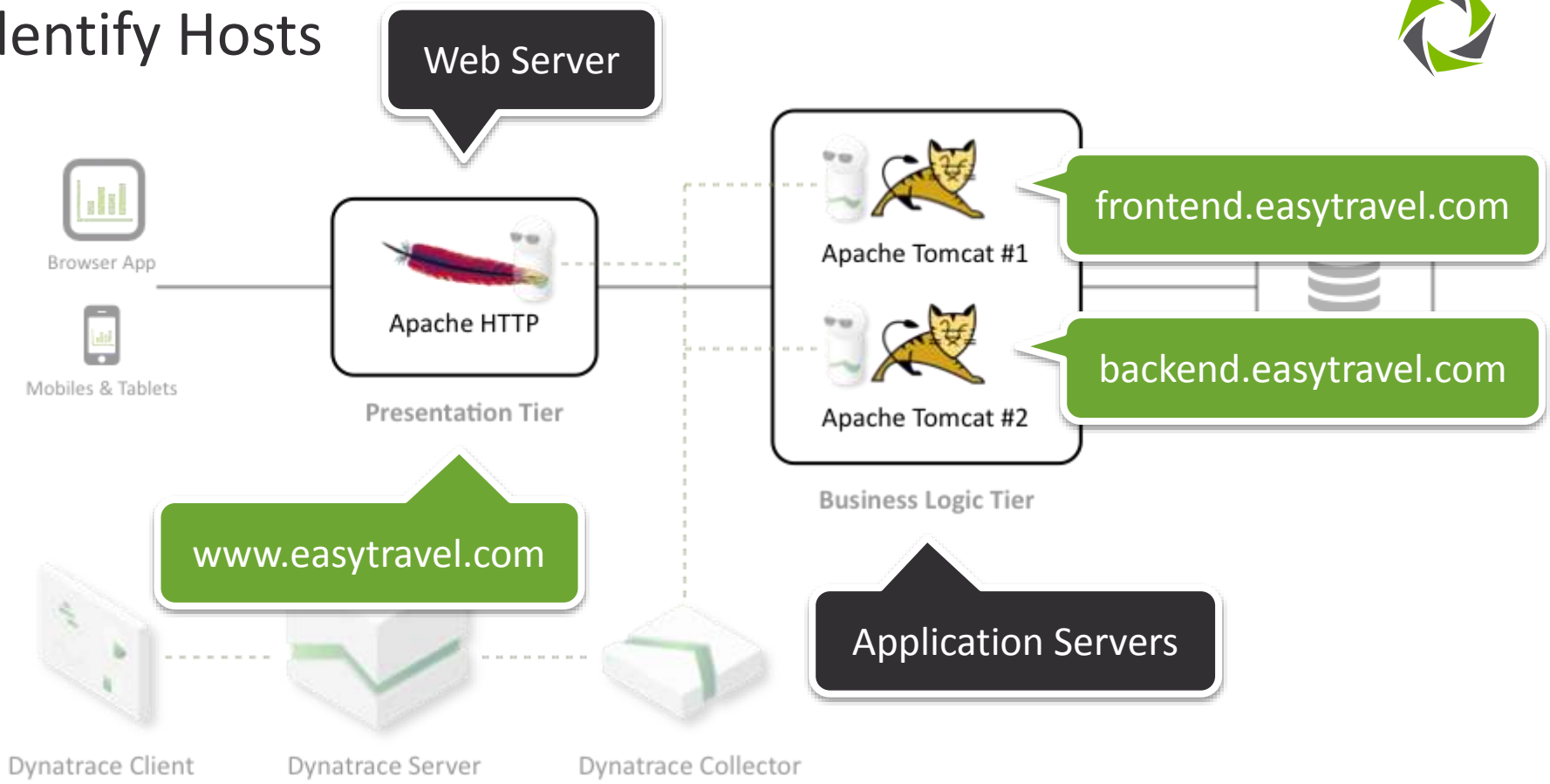
Identify Hosts



3. Execute Playbook

Dynatrace Client: Agent Connection Status

Agents Overview

Name	Host	Op...	OS ...	Connection St...	Techn...	Tech Version	Version	Bootstra...	License	System Pr...	Agent Mapping
apache-dtwsagent@dynatrace:6107	dynatrace	Linux	x86...	Connected	Web s...		6.2.0.1135	6.2.0.1135		Monitoring	Web Server
apache-dtwsagent[Apache 2.2][1]@dynatrace:	dynaTrace	Linux	x86...	Connected	Web s...		6.2.0.1135	6.2.0.1135	license ok;	Monitoring	Web Server
backend-agent@dynatrace:7090	dynatrace	Linux	x86...	Connected (H...	Java	1.7.0_67 (Orac...	6.2.0.1135	6.2.0.1135	license ok;	Monitoring	Java
frontend-agent@dynatrace:6707	dynatrace	Linux	x86...	Connected (H...	Java	1.7.0_67 (Orac...	6.2.0.1135	6.2.0.1135	license ok;	Monitoring	Java

Dynatrace Client: Transaction Flow

0 Active Visits

0 % mobile

1 Application

15 requests/minute

3 Processes

1 Host

Questions?

Additional Resources

Blogs

» Continuous Delivery 101: Automated Deployments

» How to Automate Enterprise Application Monitoring with Ansible

Presentations

» Automated Deployments: Hands-On Training

» Dynatrace Inside Continuous Delivery

Tutorials

» Automated Deployments with Dynatrace and Ansible

Thank You

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