

Automated Deployments with Ansible

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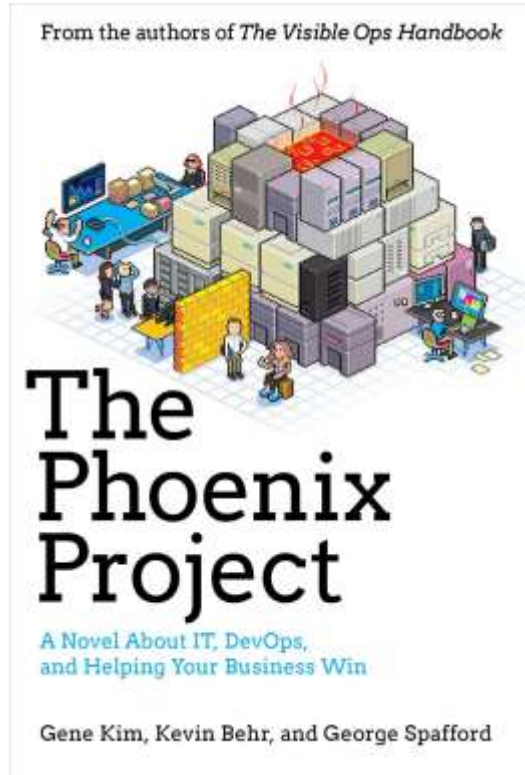
🐦 [@metmajer](https://twitter.com/metmajer)



Introduction



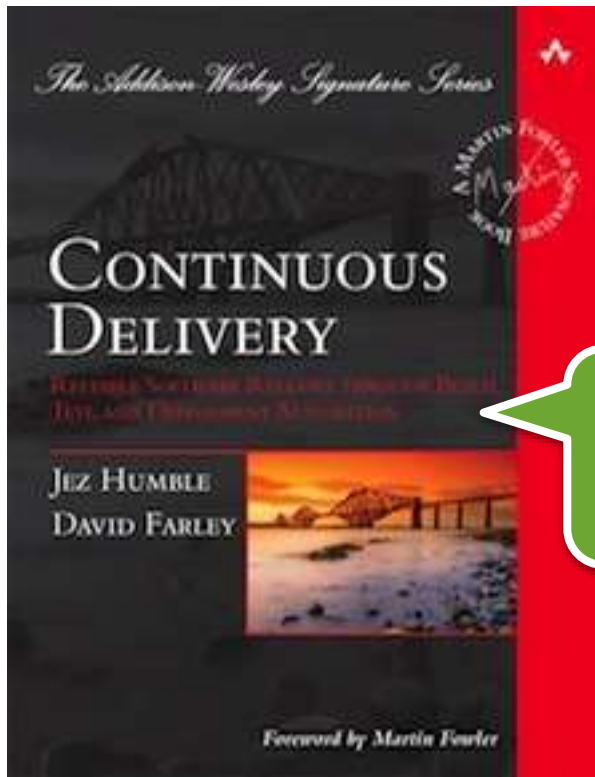
The Phoenix Project



The Phoenix Project: Review



Continuous Delivery

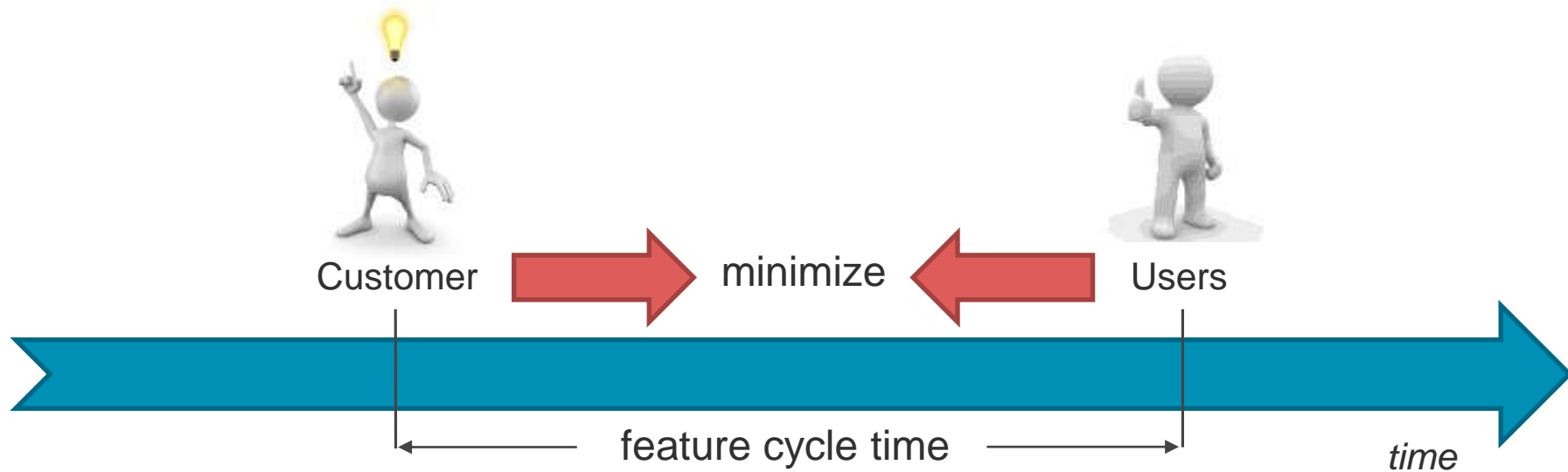


Reliable Software Releases through
Build, Test and **Deployment Automation**

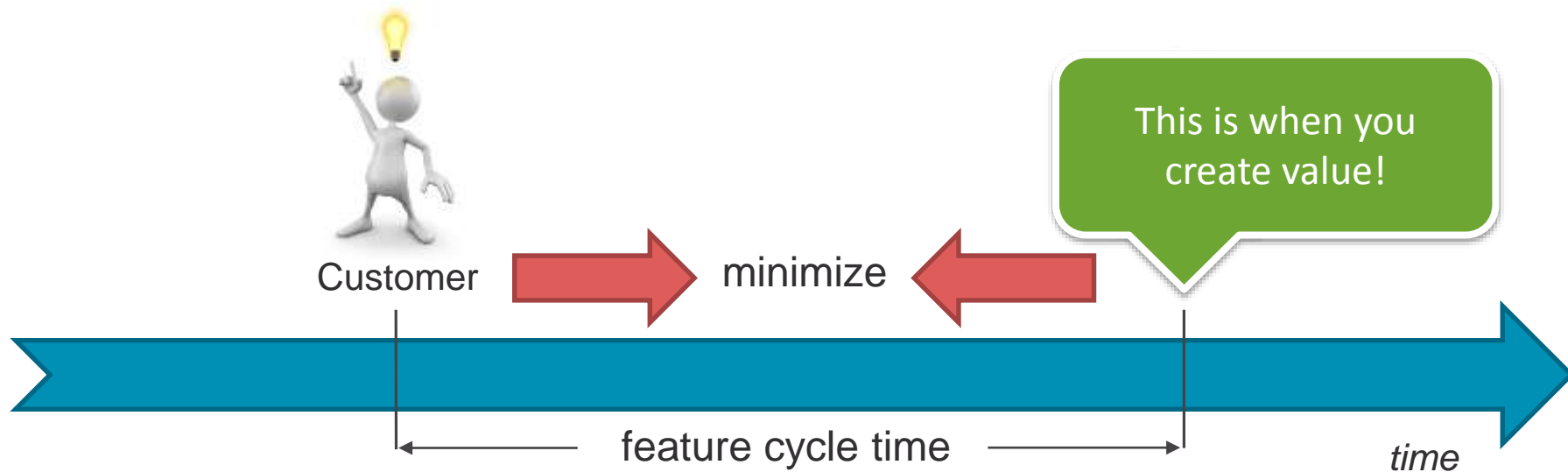
Utmost Goal: Minimize Cycle Time



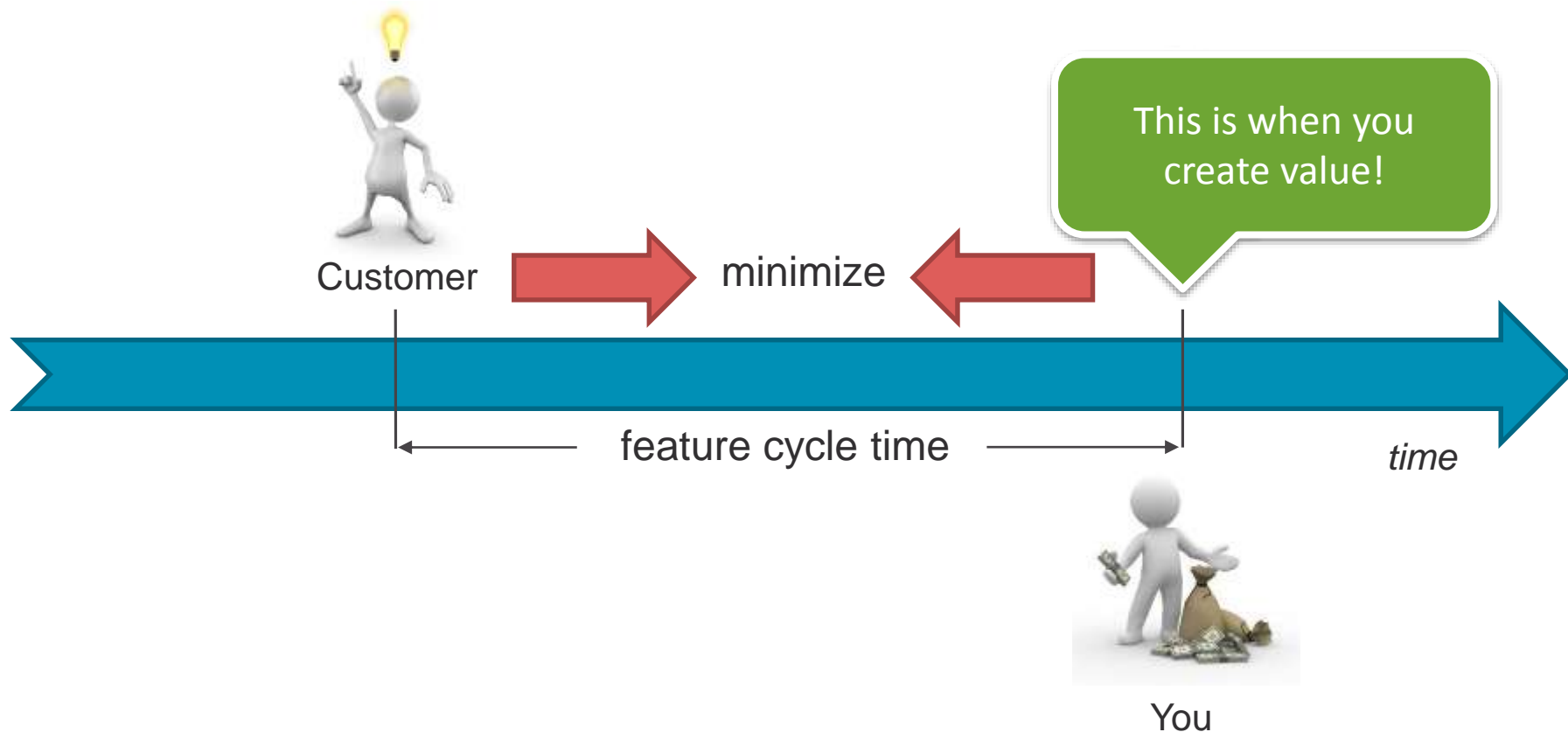
Utmost Goal: Minimize Cycle Time



Utmost Goal: Minimize Cycle Time



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

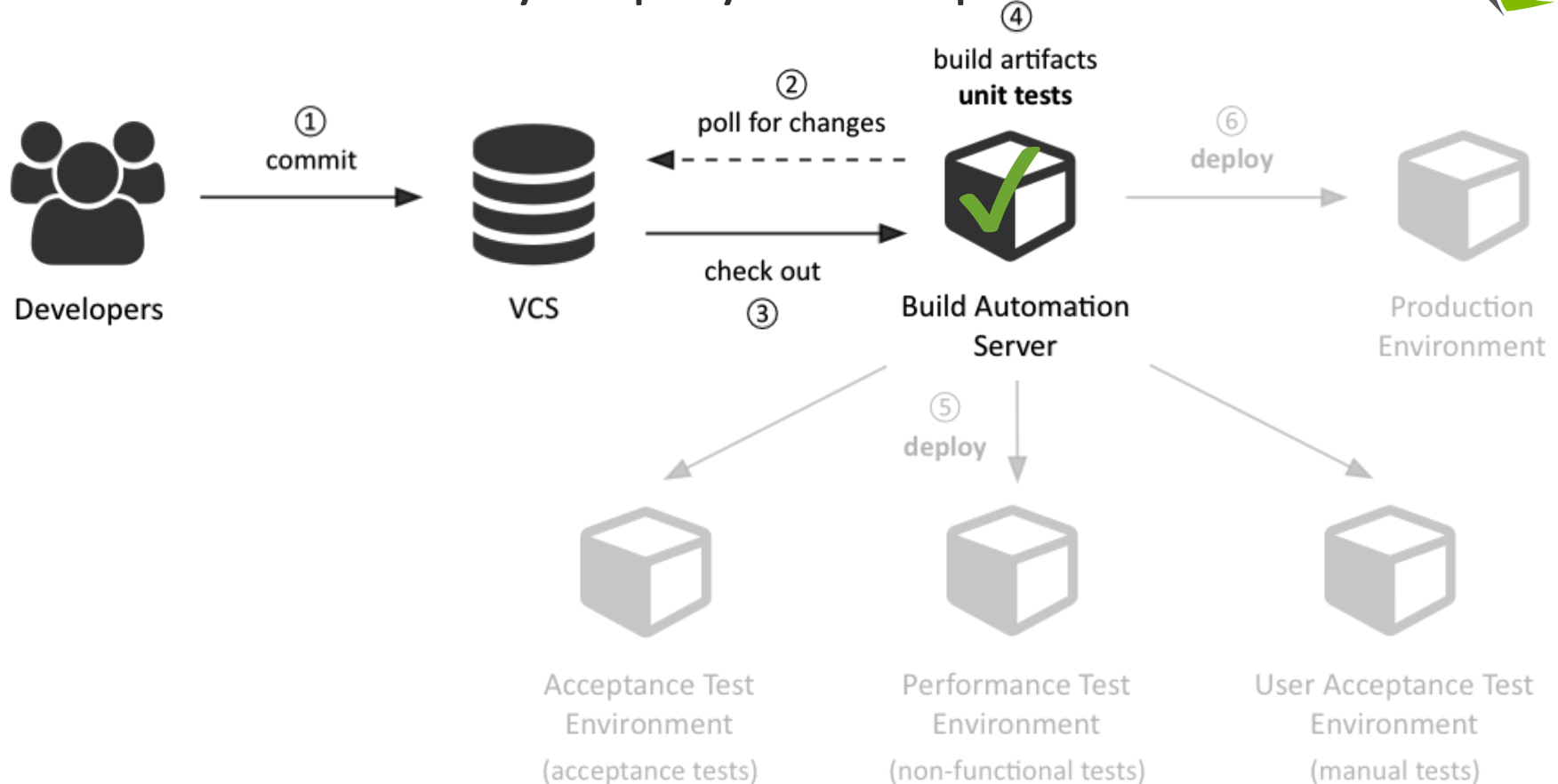
...which is at the heart of Continuous Delivery, defined as:

*“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](#)

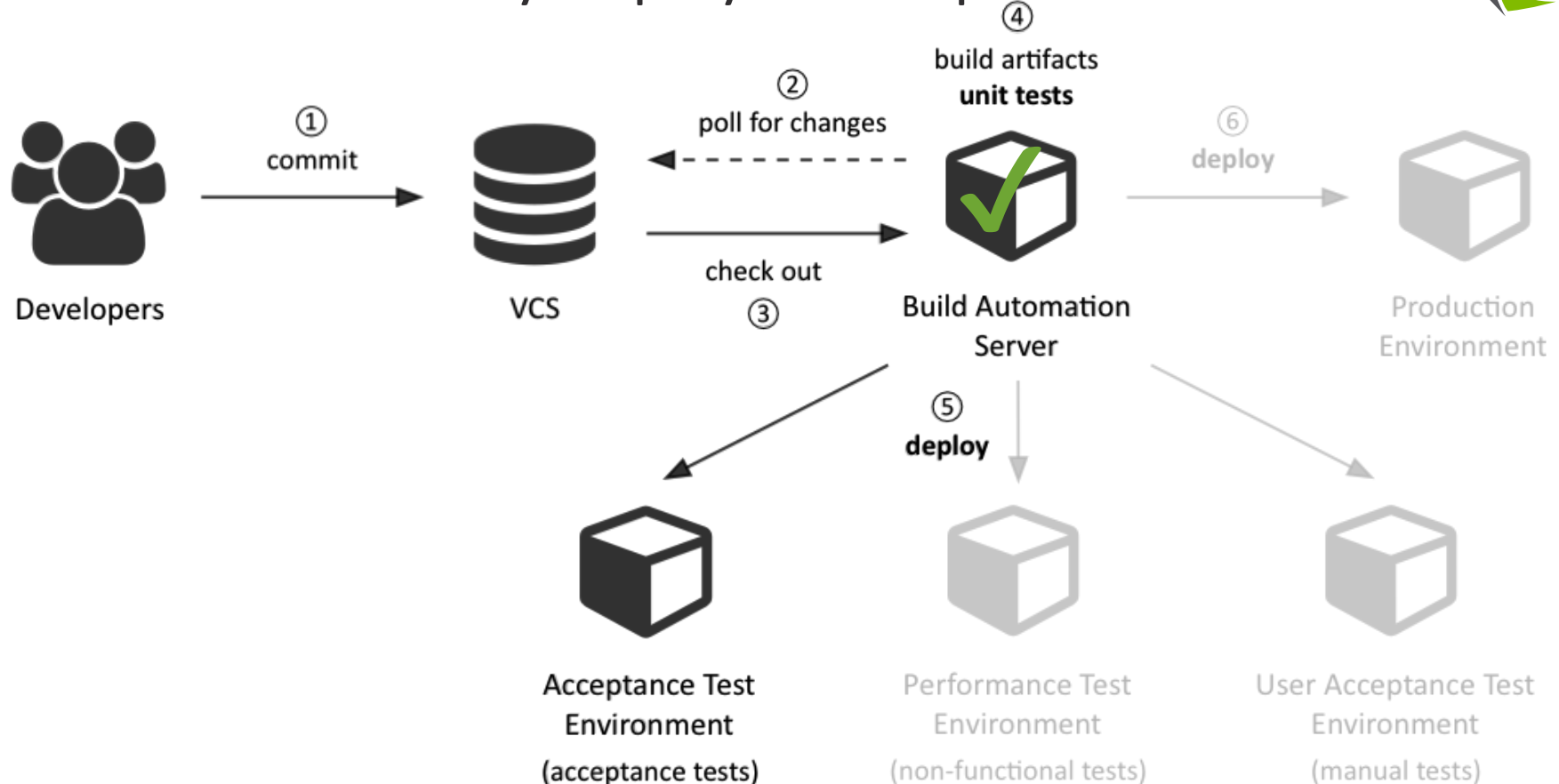


Continuous Delivery Deployment Pipeline



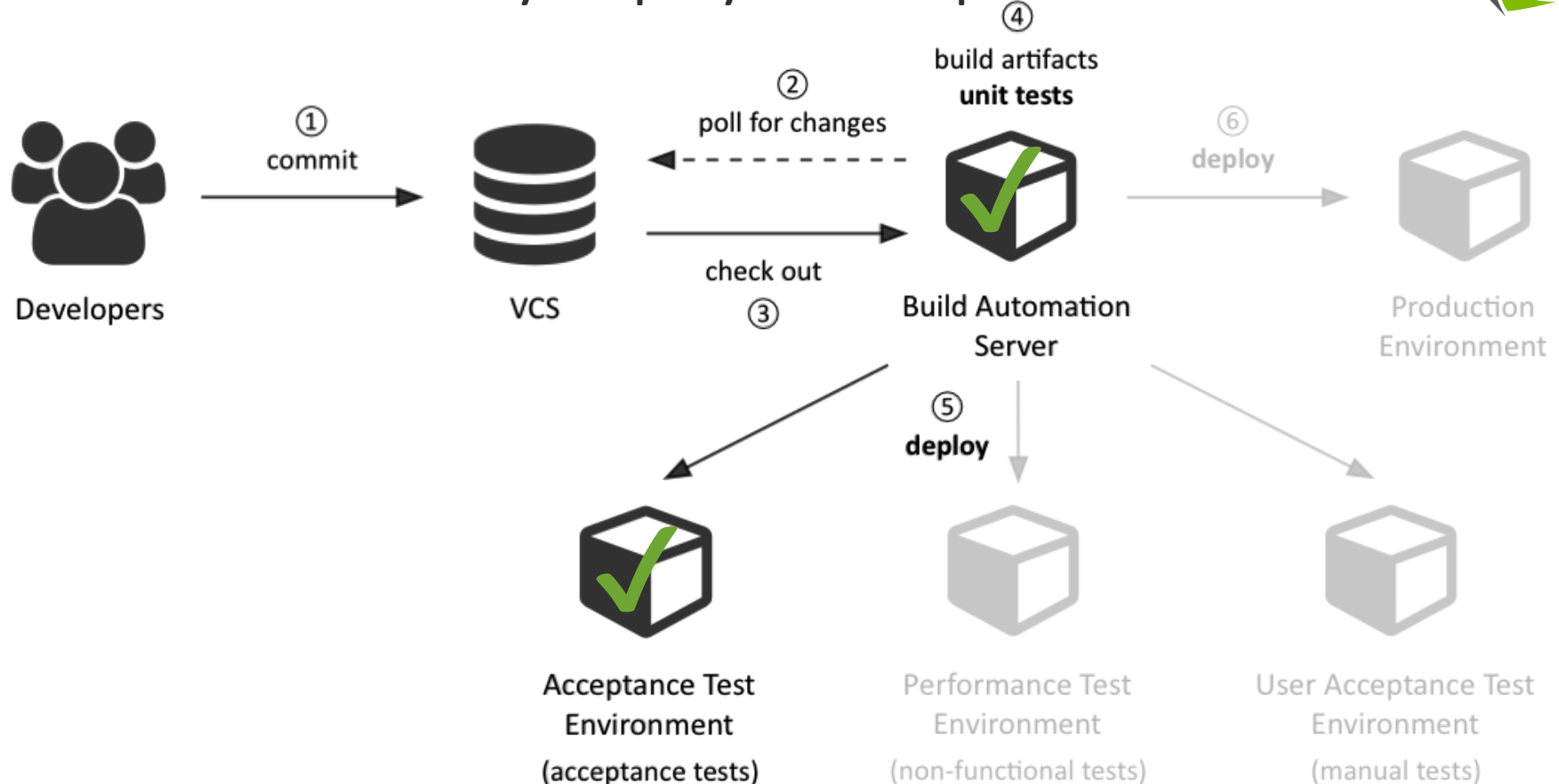


Continuous Delivery Deployment Pipeline



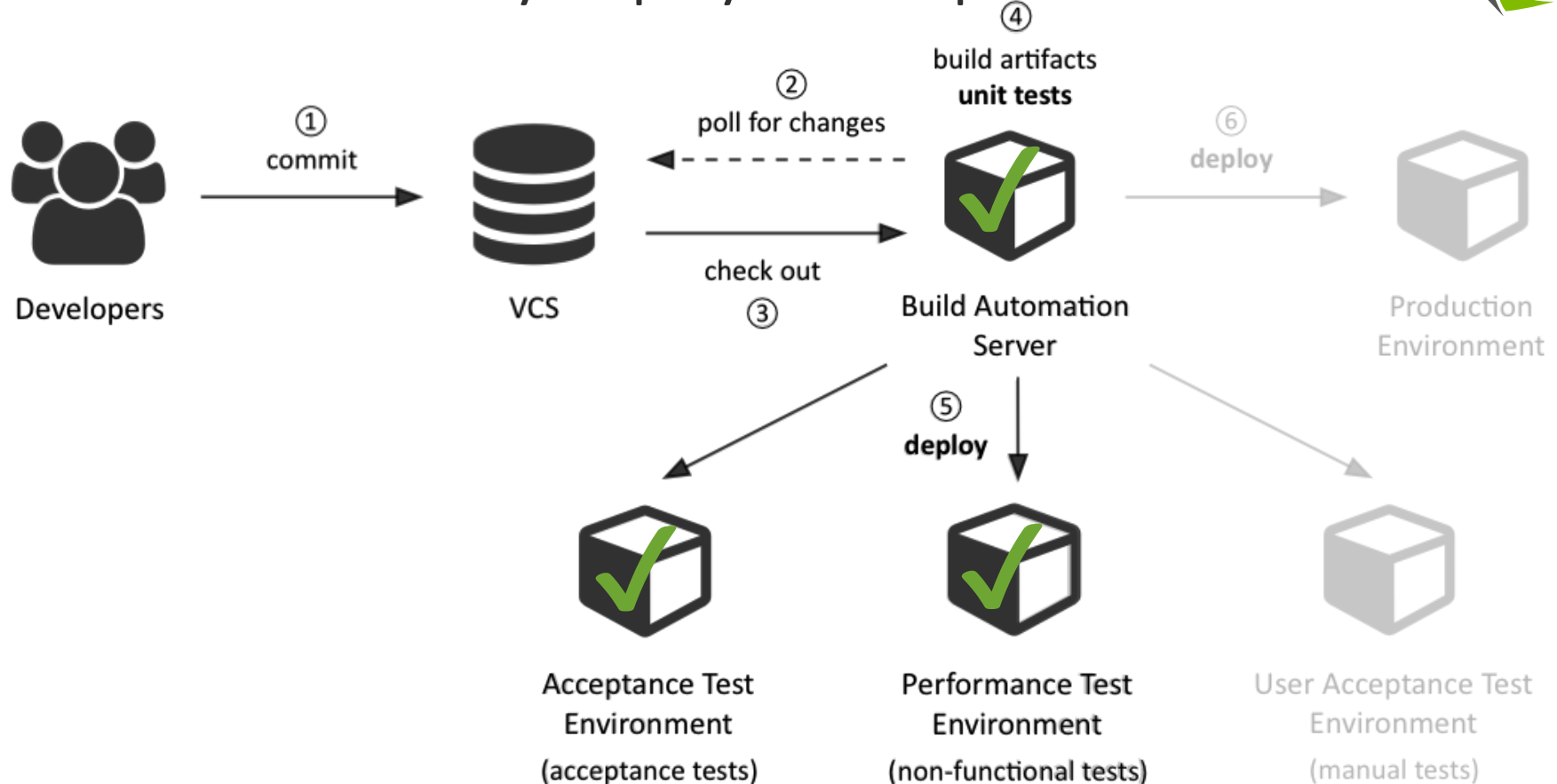


Continuous Delivery Deployment Pipeline



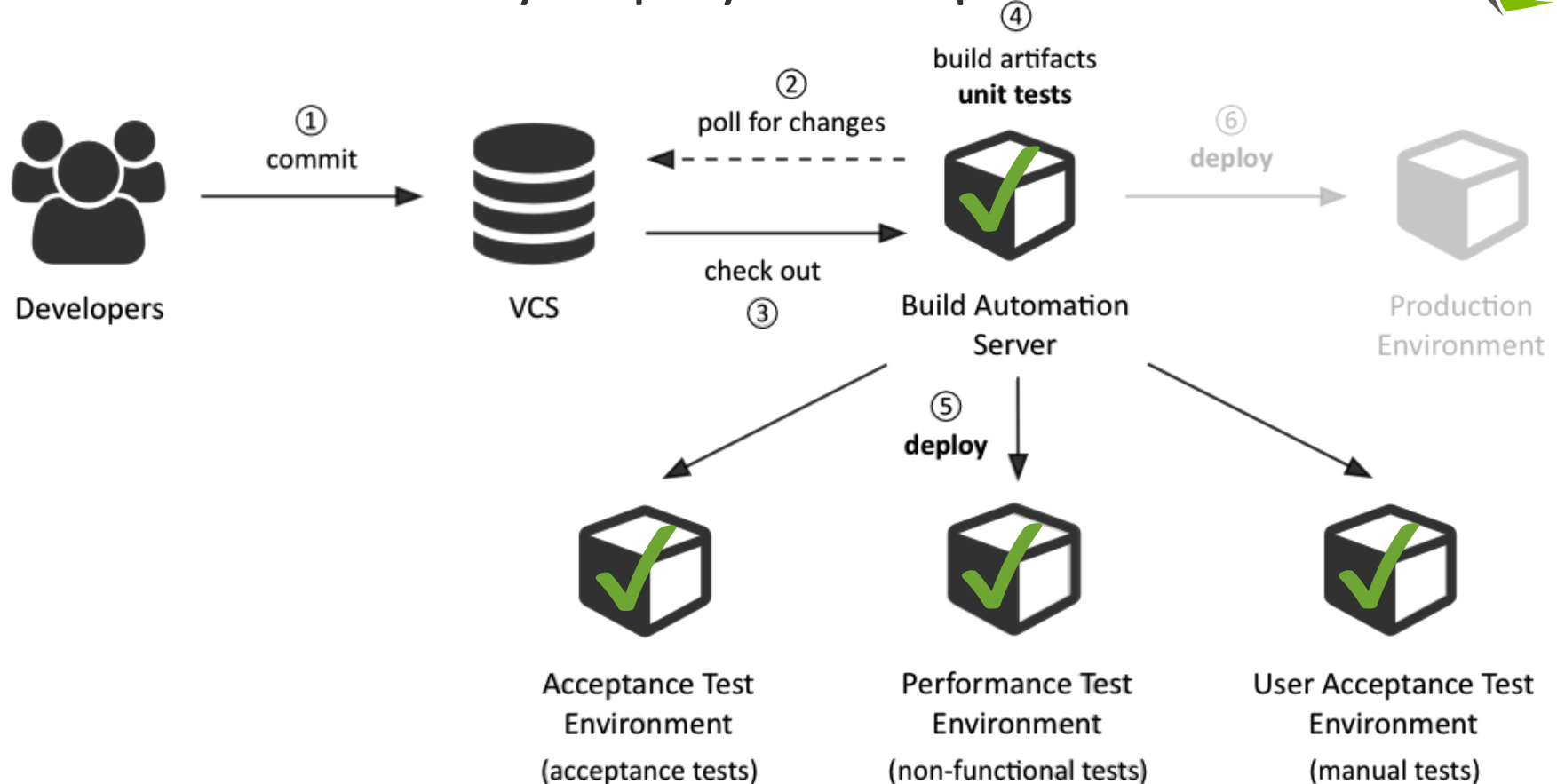


Continuous Delivery Deployment Pipeline



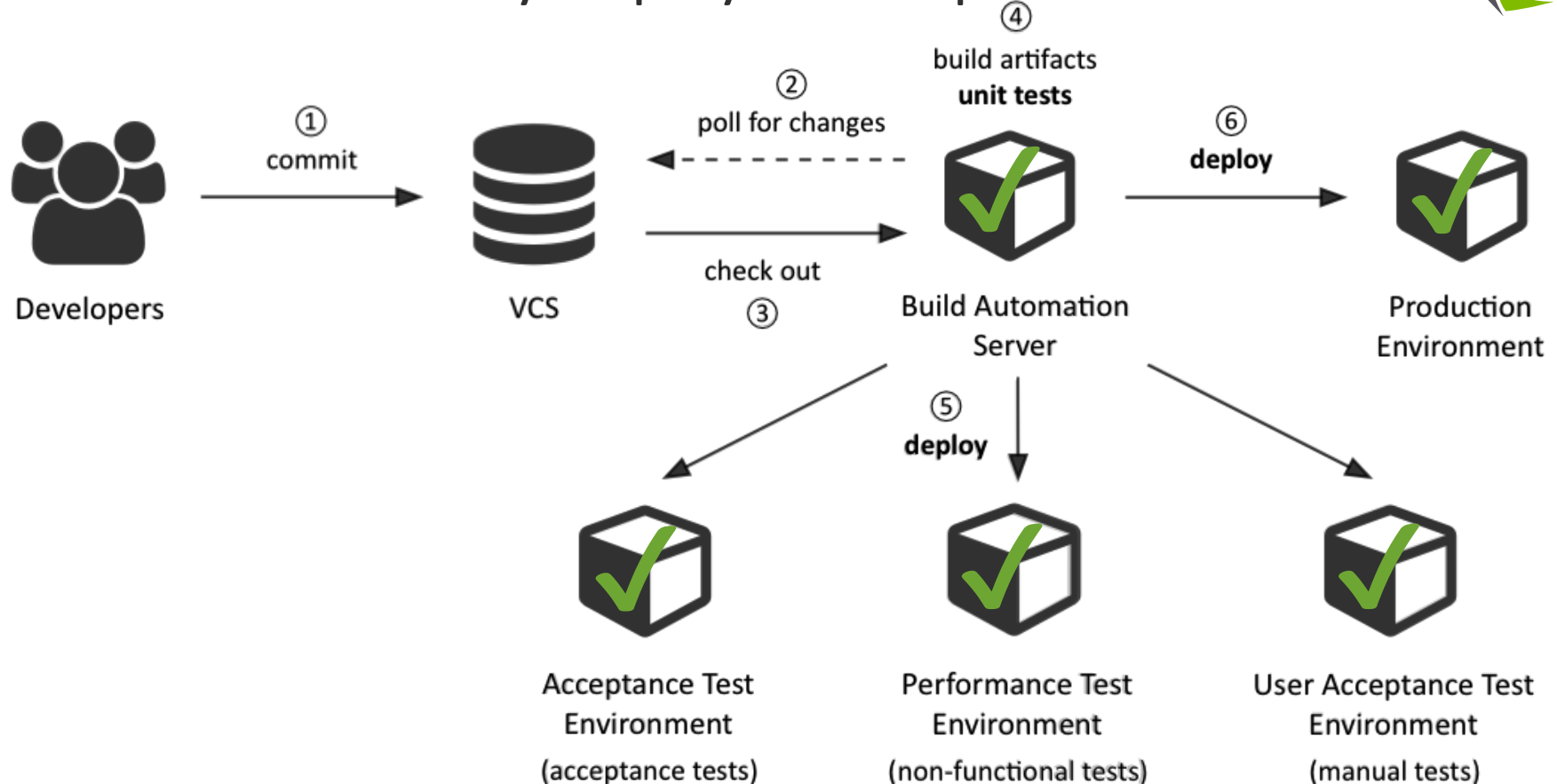


Continuous Delivery Deployment Pipeline





Continuous Delivery Deployment Pipeline





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

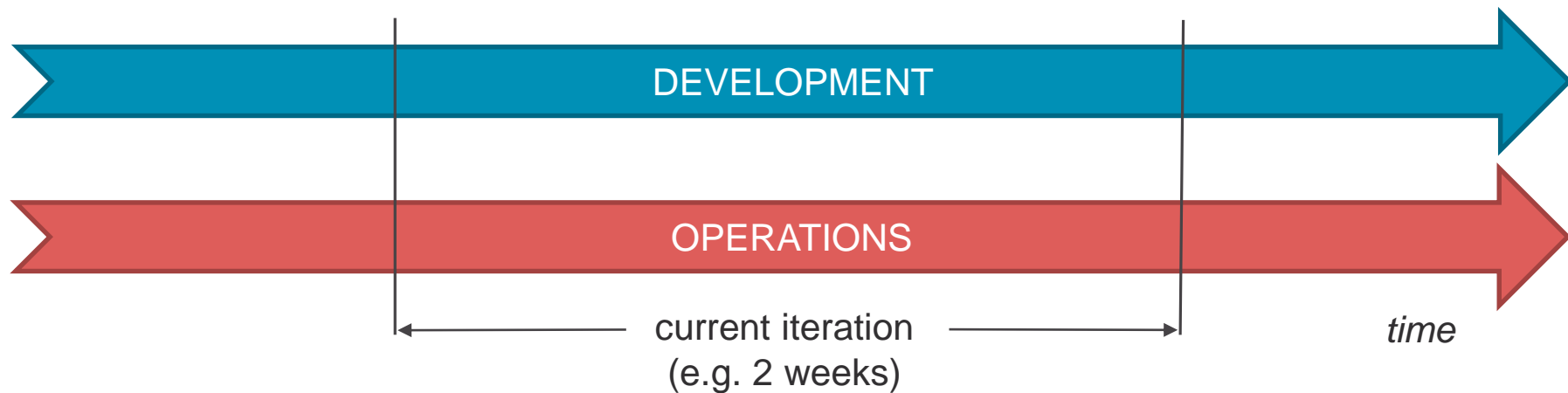
How?

- » Infrastructure as Code!
- » Keep everything in Version Control
 - » Code
 - » Configuration
 - » Data
- » Align **D**evelopment and **O**perations

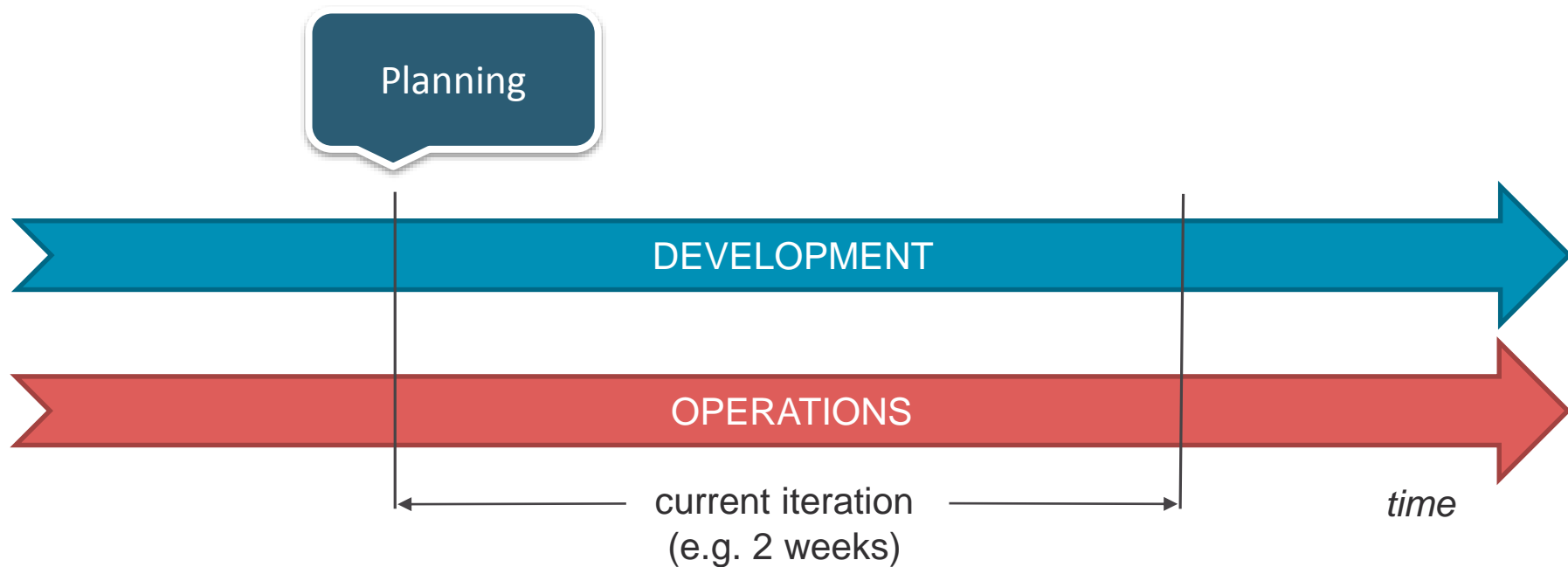
A green speech bubble with a white border and a drop shadow, pointing towards the 'Keep everything in Version Control' item.

Everything that affects
application state

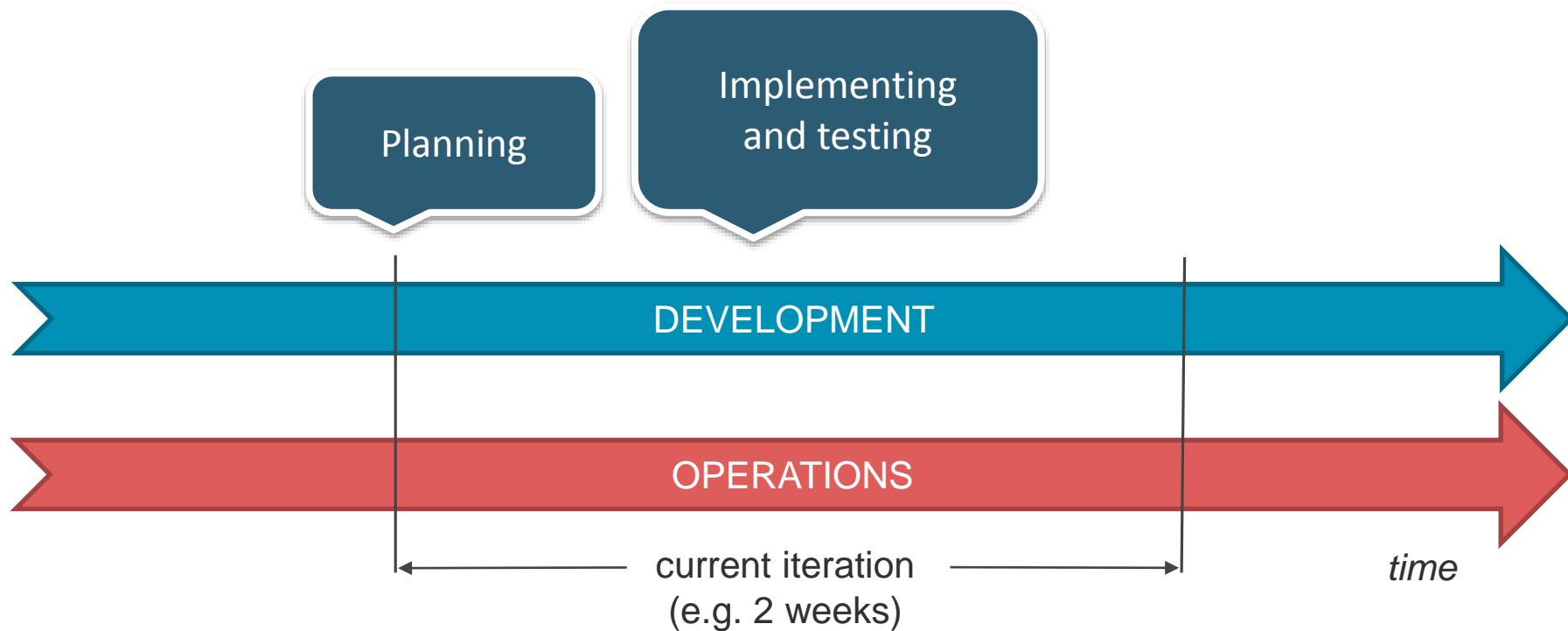
Align Development and Operations



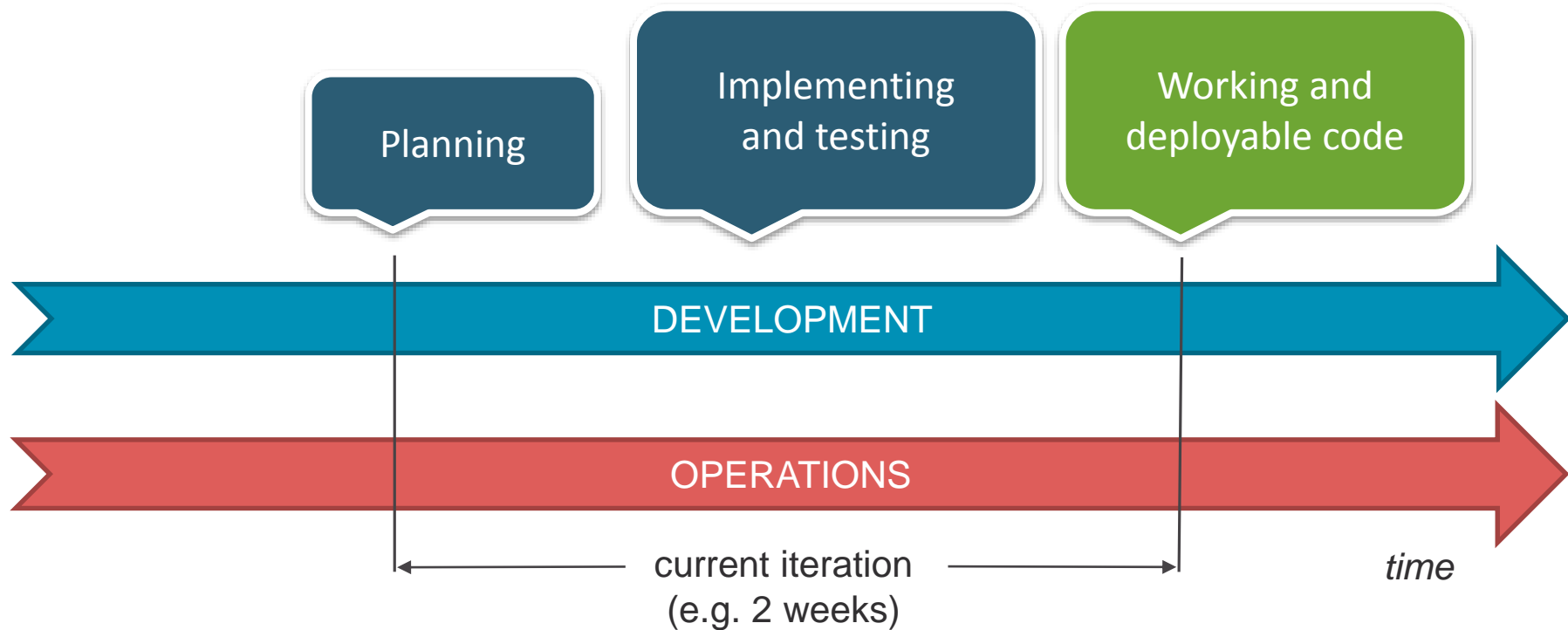
Align Development and Operations



Align Development and Operations



Align Development and Operations





“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

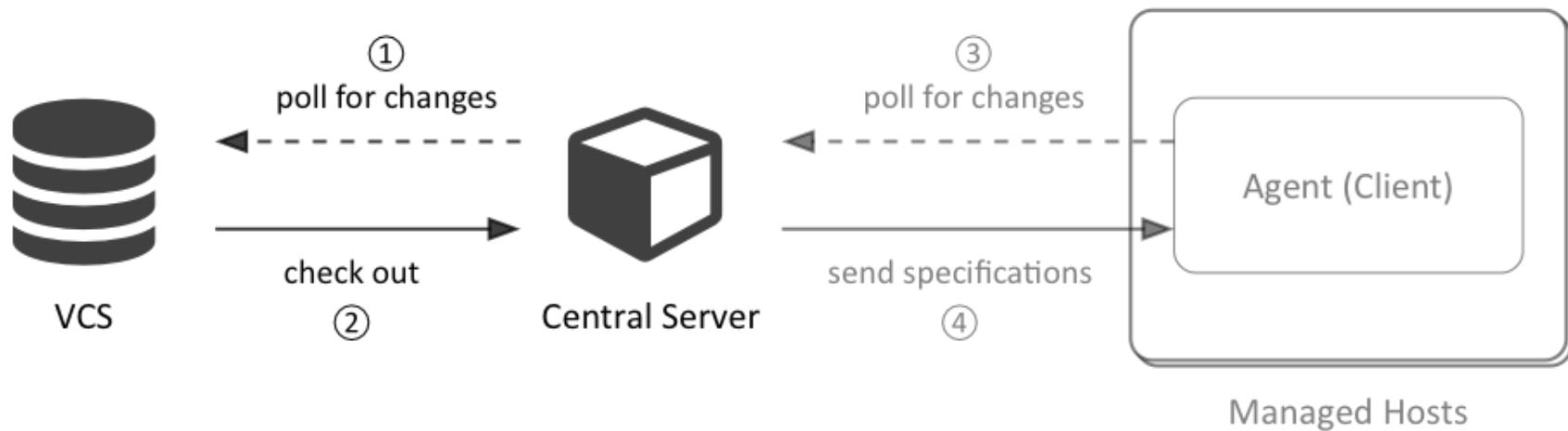
Architectural Comparison



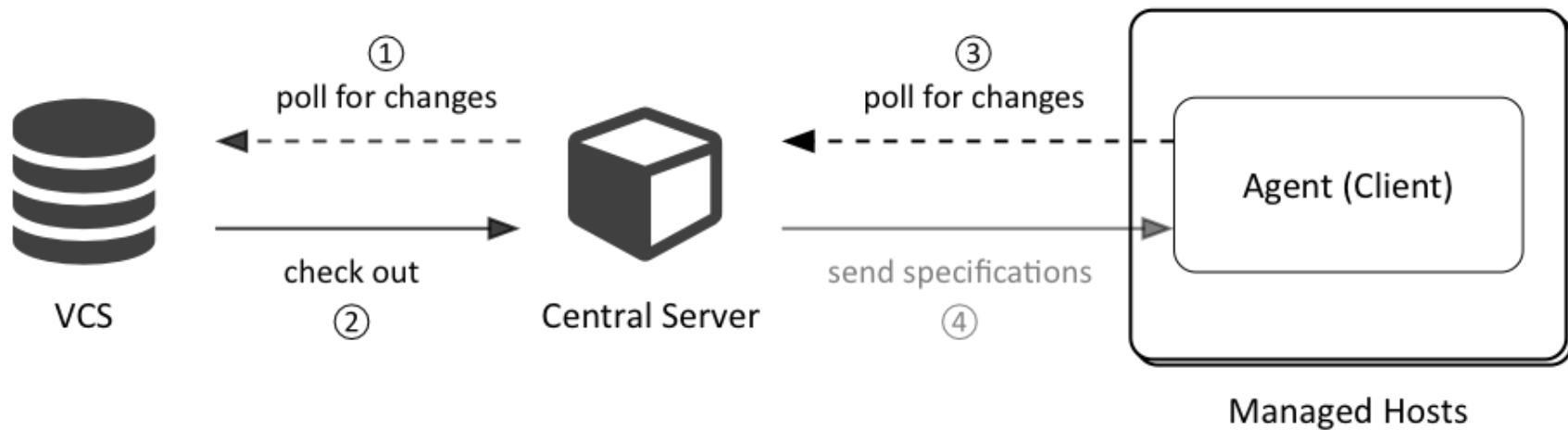
Agent-Based Architectures

Examples: Chef, Puppet

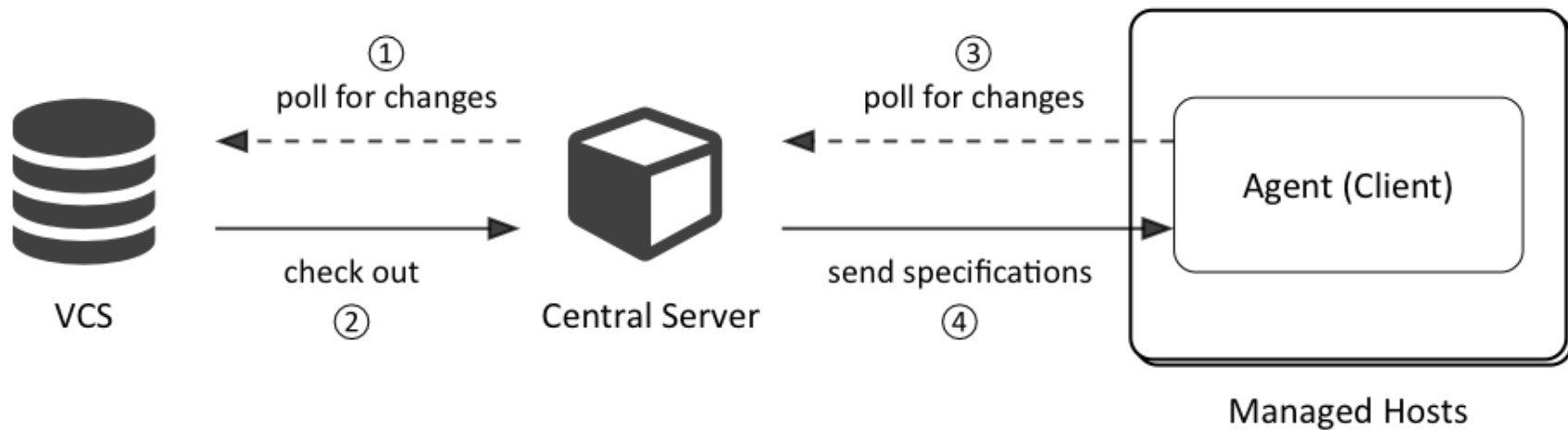
Agent-Based Architectures



Agent-Based Architectures



Agent-Based Architectures

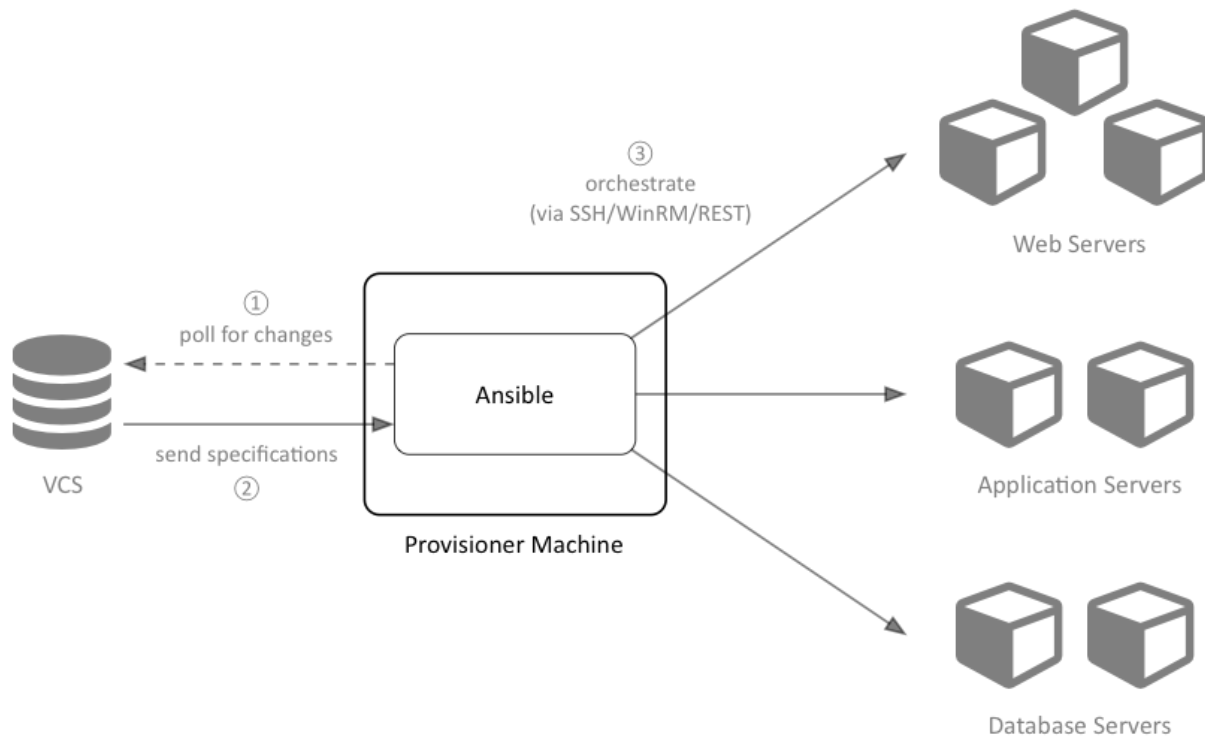




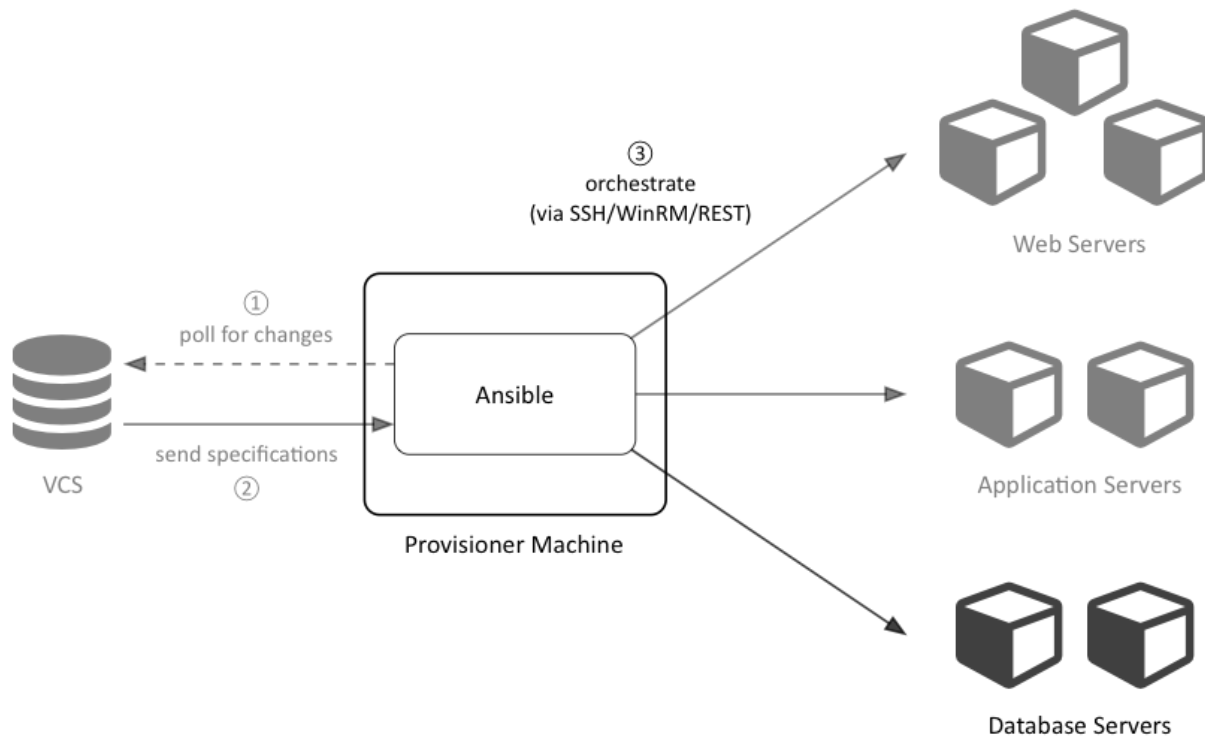
Agentless Architectures

Examples: Ansible

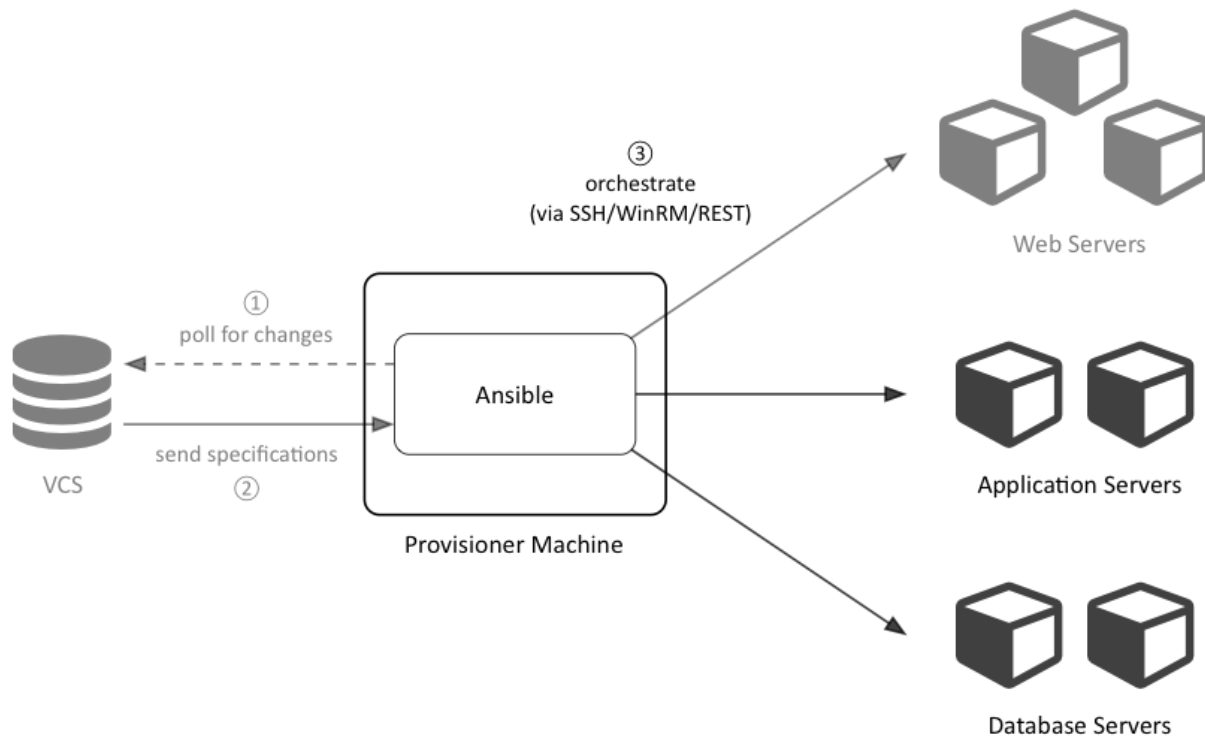
Ansible's Agentless Architecture



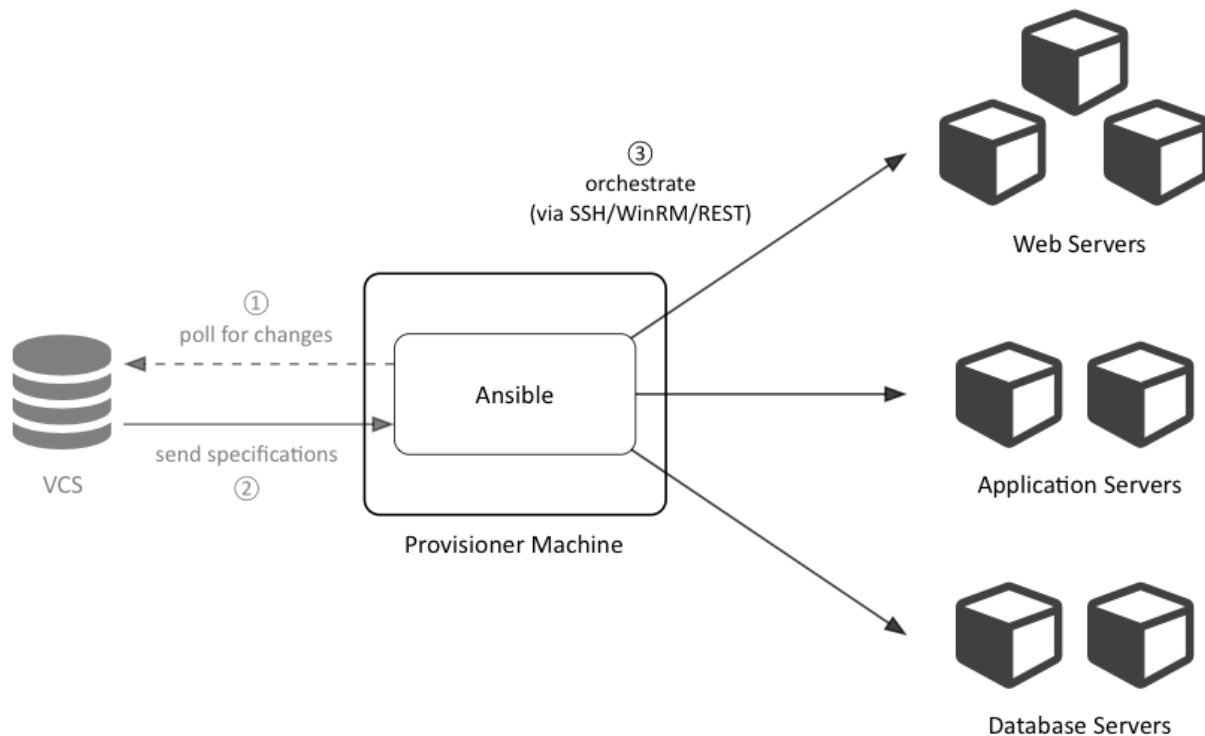
Ansible's Agentless Architecture



Ansible's Agentless Architecture



Ansible's Agentless Architecture

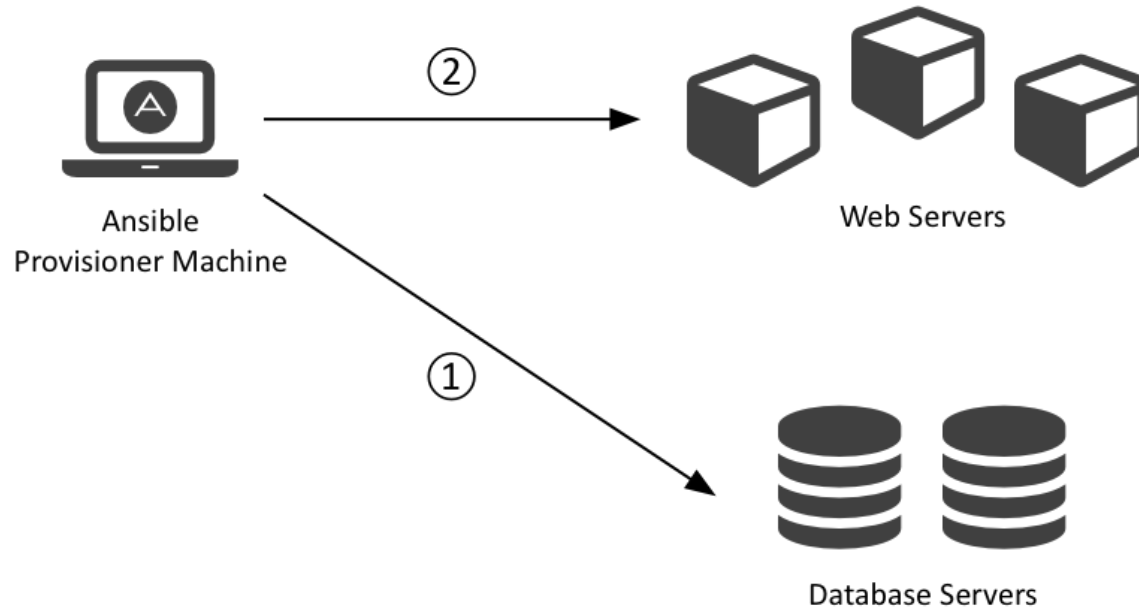




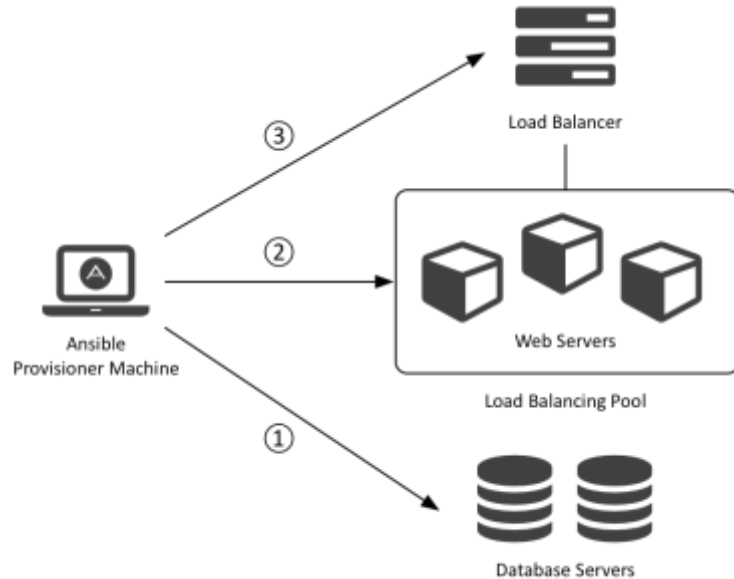
Ansible is an Orchestration Engine



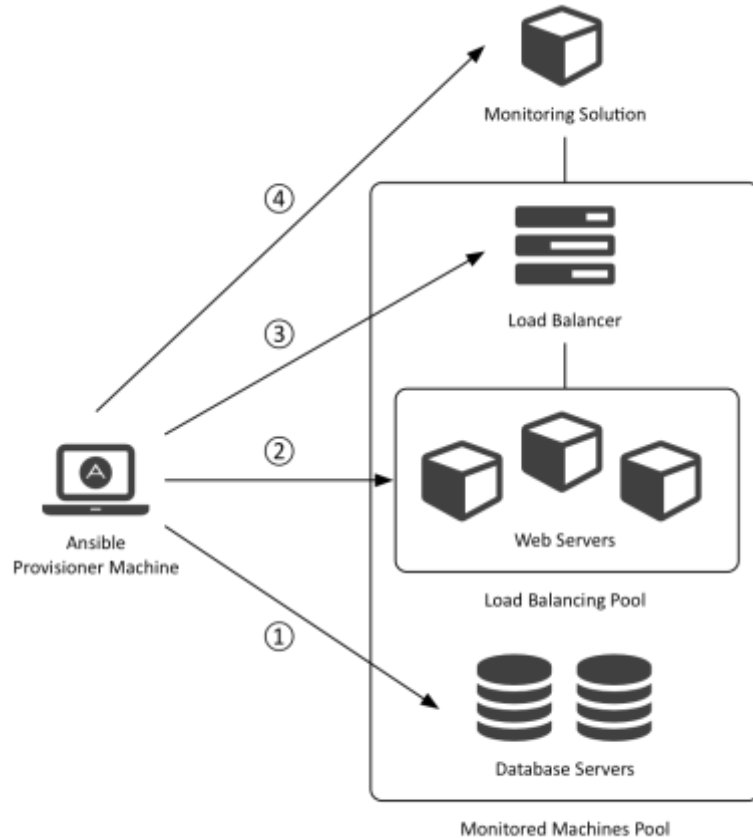
Ansible is an Orchestration Engine 🎵



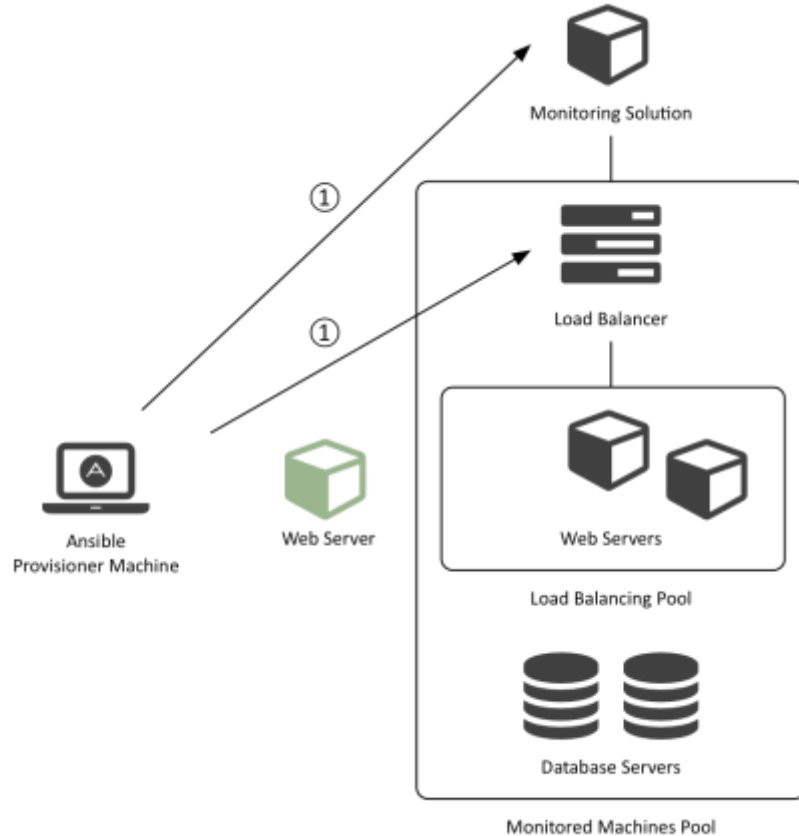
Ansible is an Orchestration Engine 🎵



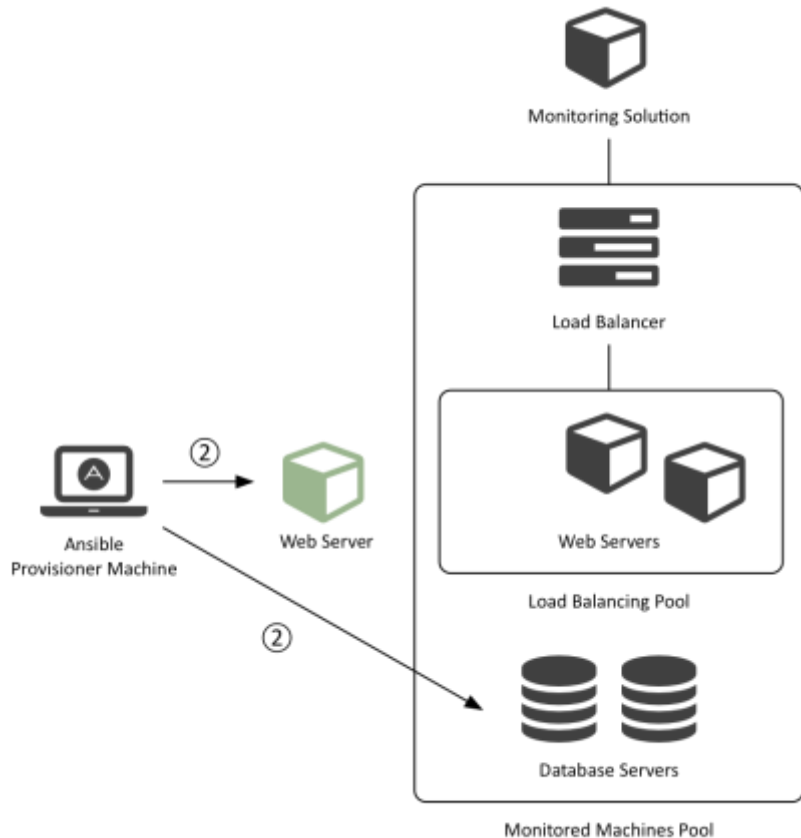
Ansible is an Orchestration Engine 🎵



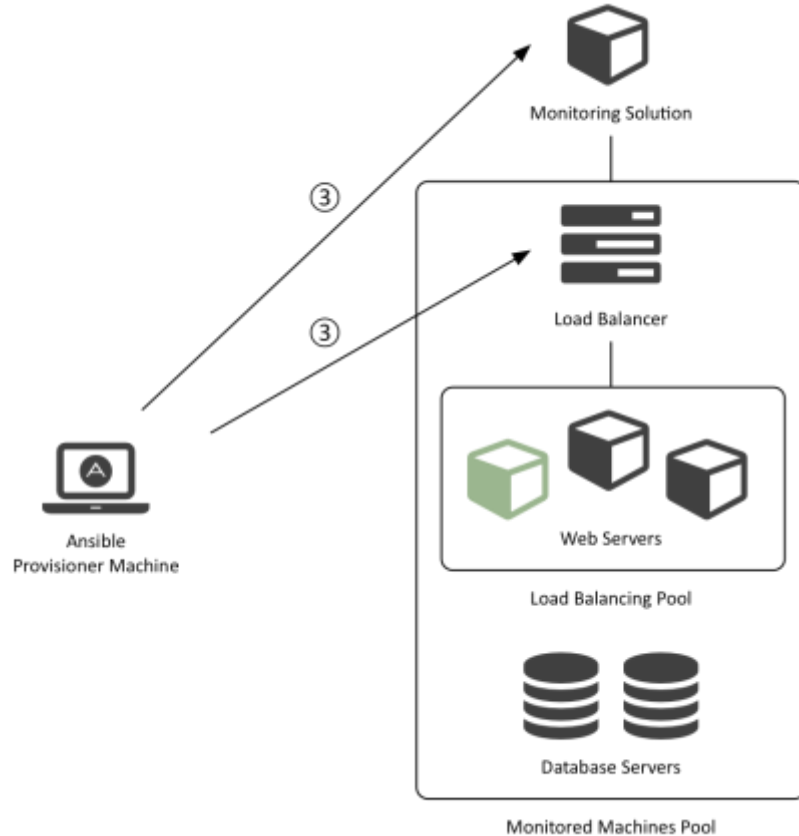
Ansible is an Orchestration Engine 🎵



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Ansible is an Orchestration Engine 🎵

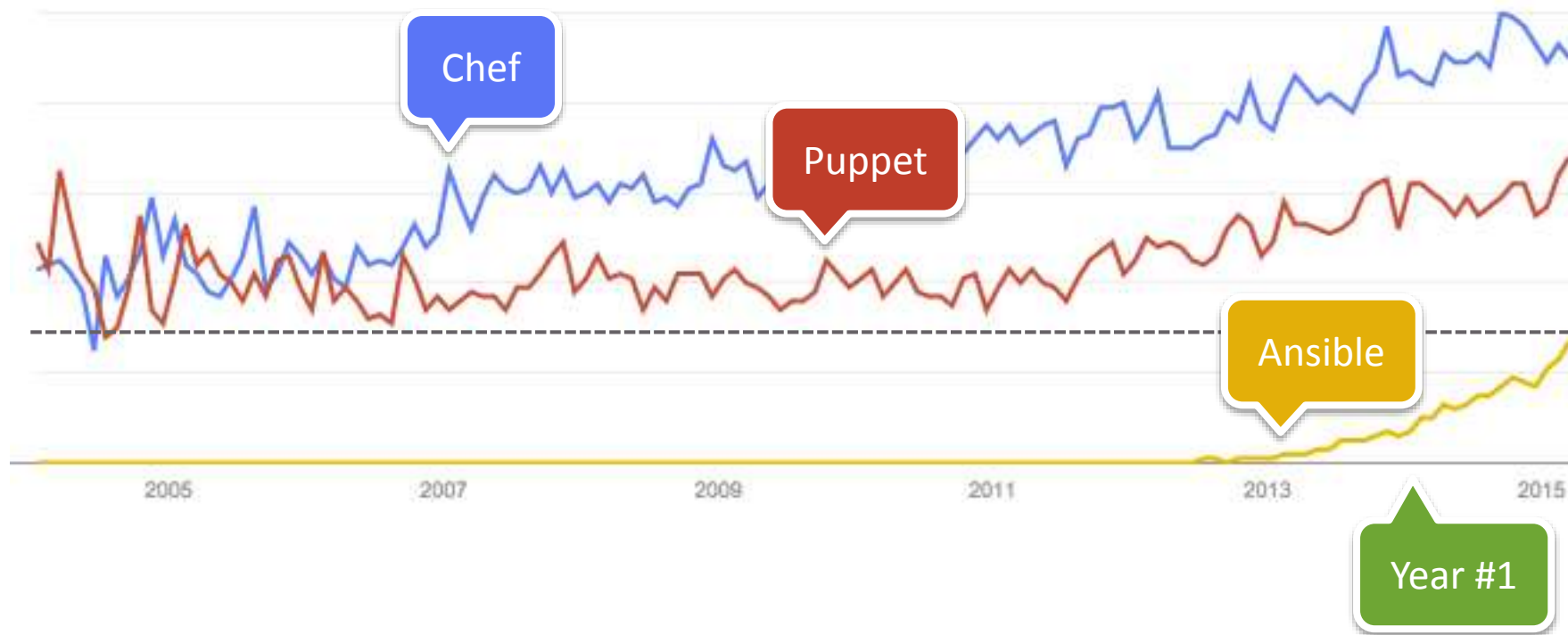




What about Demand?



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



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



ANSIBLE GALAXY

[Home](#)[About](#)[Explore](#)[Browse Roles](#)[Browse Users](#)

Browse Users

☐ Reverse Order

User	Roles	Latest Rating
------	-------	---------------



dynatrace

Karma NA

Date Joined 1/21/15 12:13 PM

[Dynatrace-Agents](#)
[Dynatrace-Collector](#)
[Dynatrace-Server](#)
[Dynatrace-WebServer-Agent](#)
[Dynatrace-License](#)
[more...](#)

No ratings found.

Roles contributed 11

Avg. Community Score NA

Avg. Ansible Score NA

Dynatrace GitHub Organization



The screenshot displays the GitHub organization page for Dynatrace. The organization's profile includes the Dynatrace logo, name, location (Waltham, Boston), website (http://www.dynatrace.com), and email (ingo.hackl@dynatrace.com). A search bar with the filter 'ansible' is visible. The repository list shows two repositories: 'Dynatrace-Ansible' (Ruby, 2 forks, 1 pull request) and 'Dynatrace-WebServer-Agent-Ansible' (4 forks, 1 pull request). The right sidebar features a 'People' section with 20 members and a 'Teams' section with 5 teams.



Automated Deployments: What's the Status?

Chef Cookbook

- » Customers have provided their own implementations
- » 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

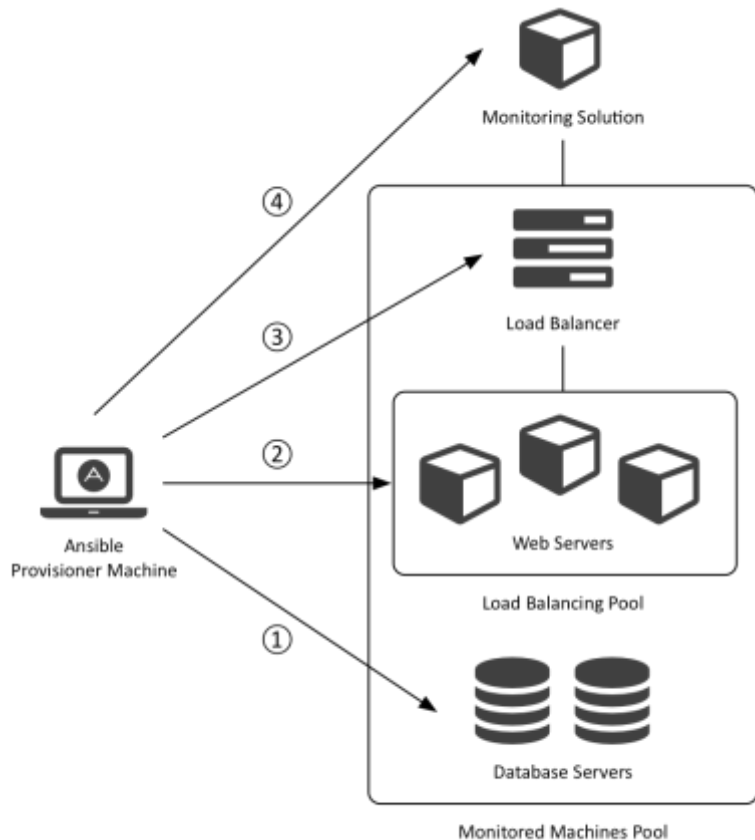


Ansible Concepts: Inventories

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

Group

Numeric Range

Host

Alphabetic Range

```
# production
```

```
[balancers]  
www.example.com
```

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

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

```
[monitoring]  
dynatrace.example.com
```



Ansible Concepts: Playbooks



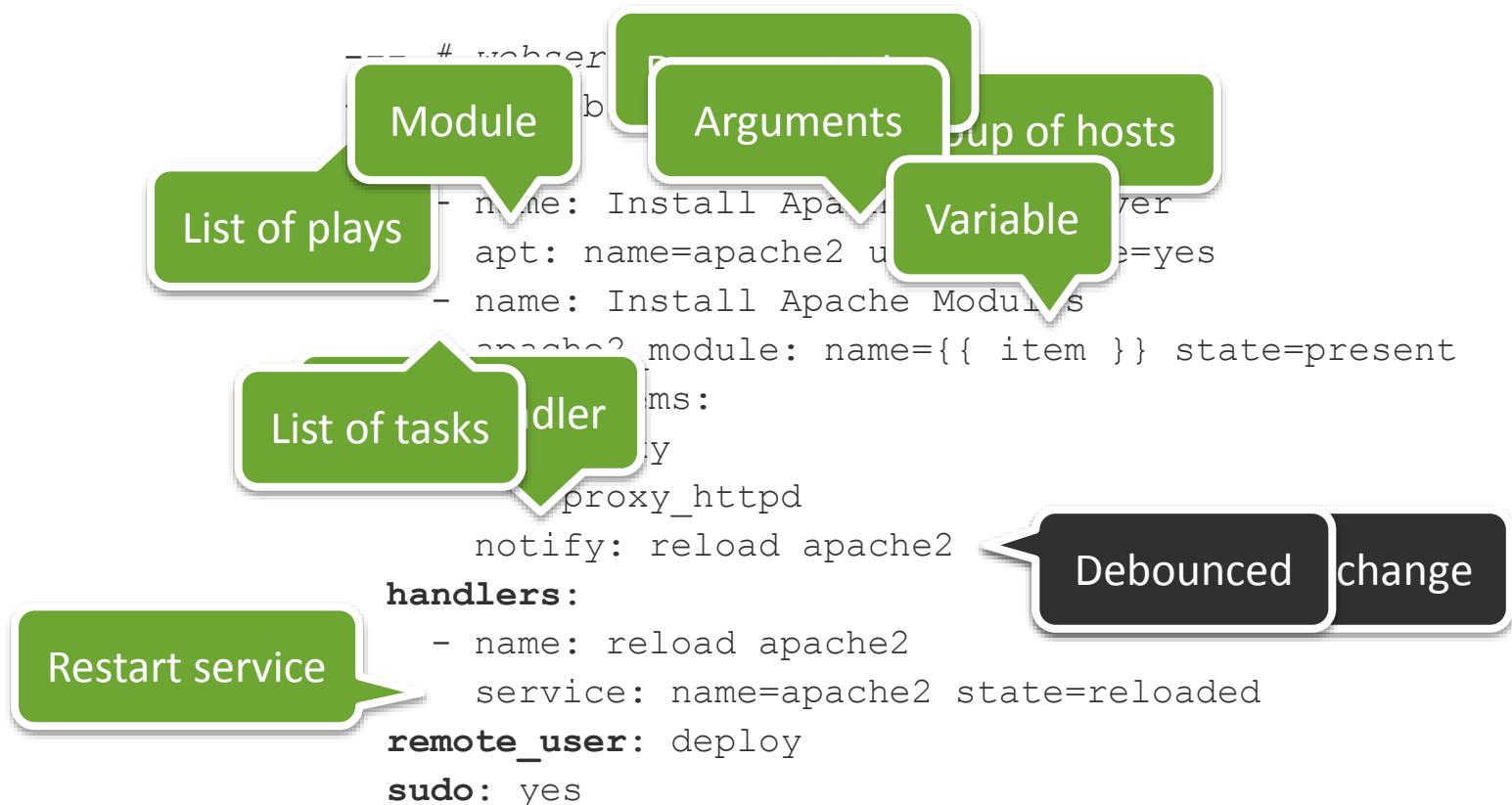
Ansible Concepts: Playbooks

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

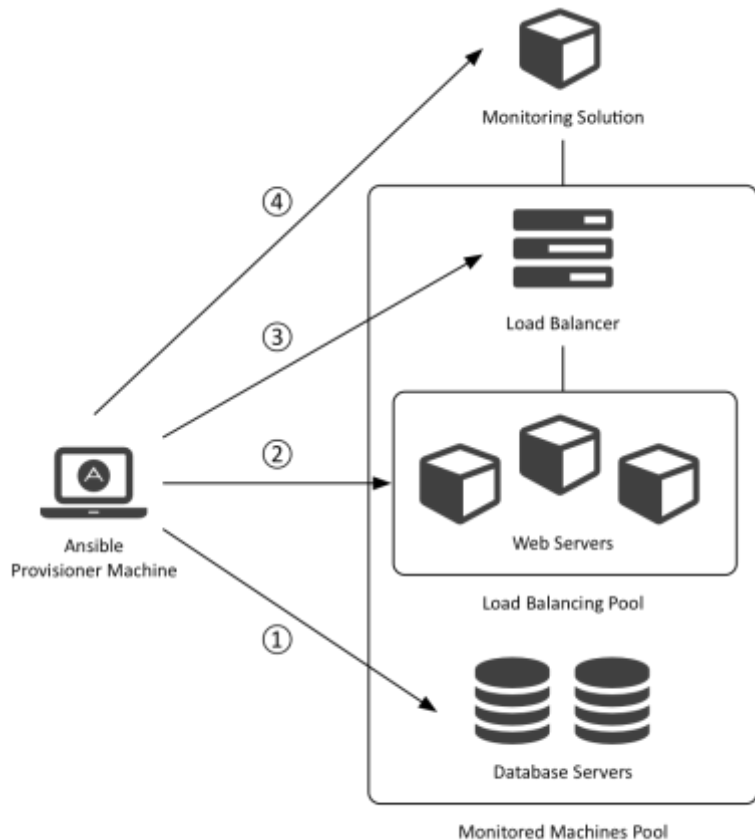
- » Describes **policies** machines under management shall enforce
- » Contains **variables, tasks, handlers, files, templates** and **roles**
- » Expressed in **YAML**



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

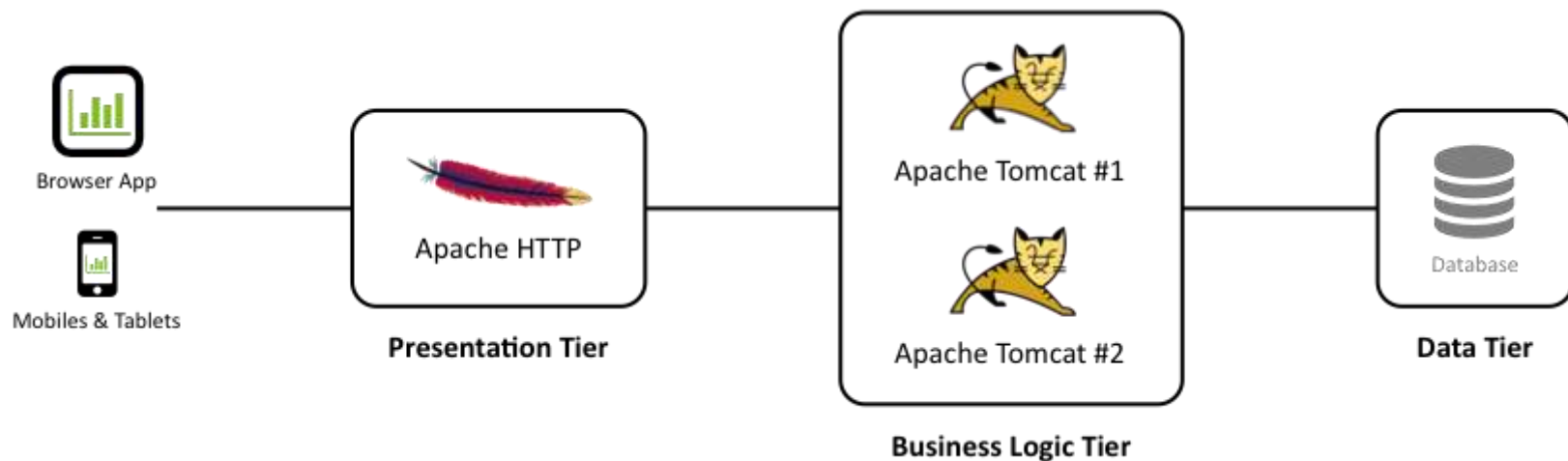
with Ansible

in 3 simple steps

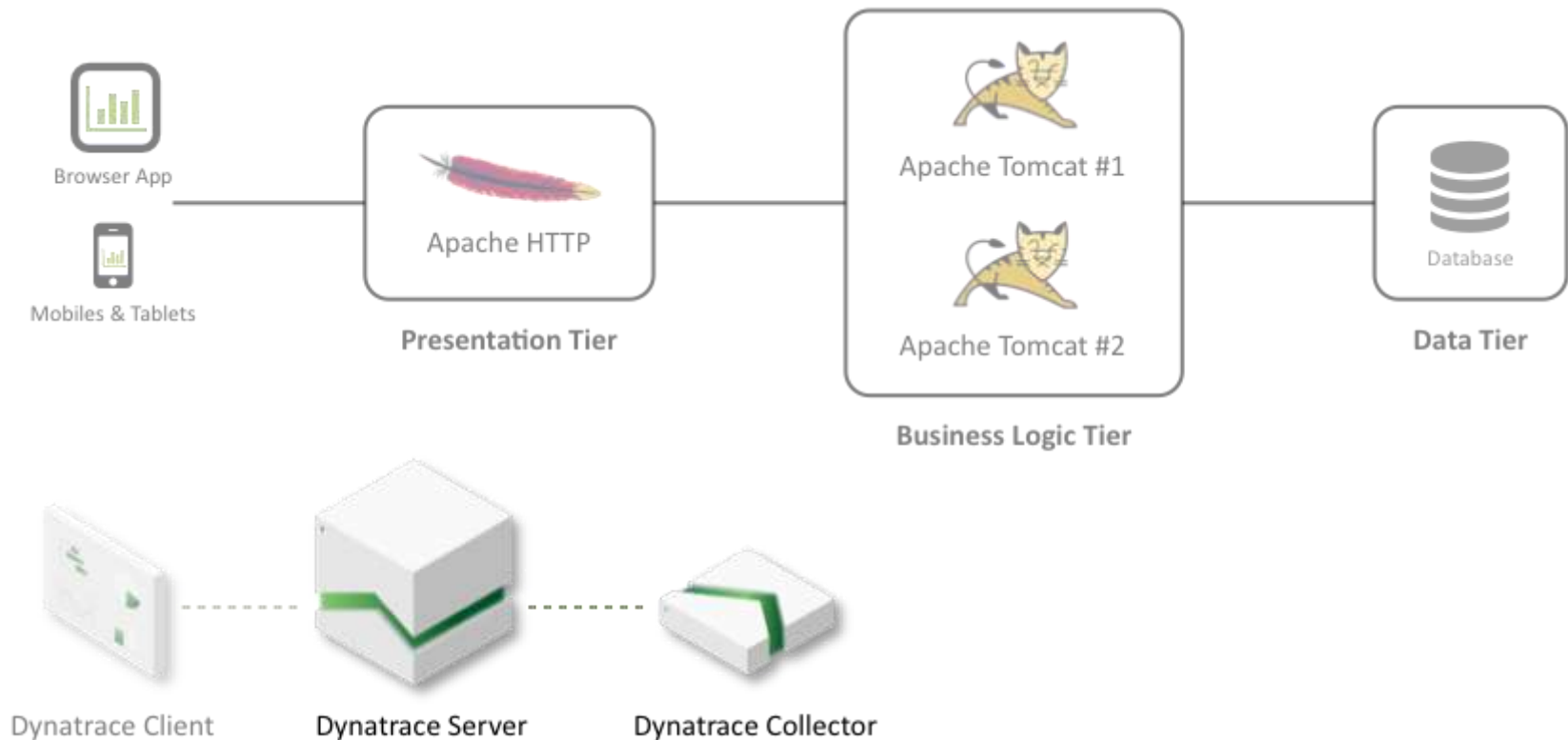
Simulated Production Environment: easyTravel



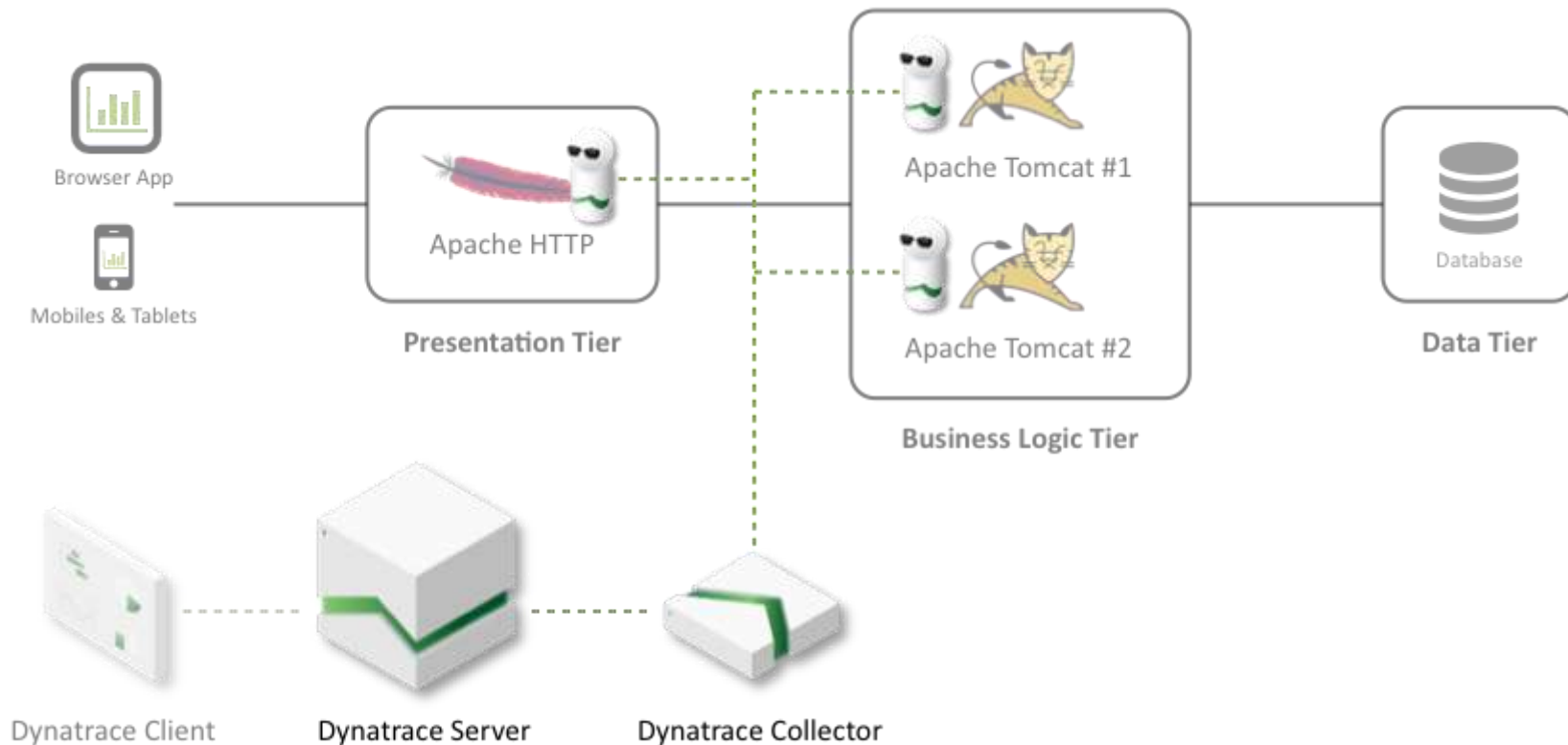
Simulated Production Environment: easyTravel



Deployment Scenario I: Install Server & Collector



Deployment Scenario II: Inject Agents





Deployment Scenario: Install Server & Collector



1. Gather Dependencies

Ansible Galaxy: Dynatrace-Server

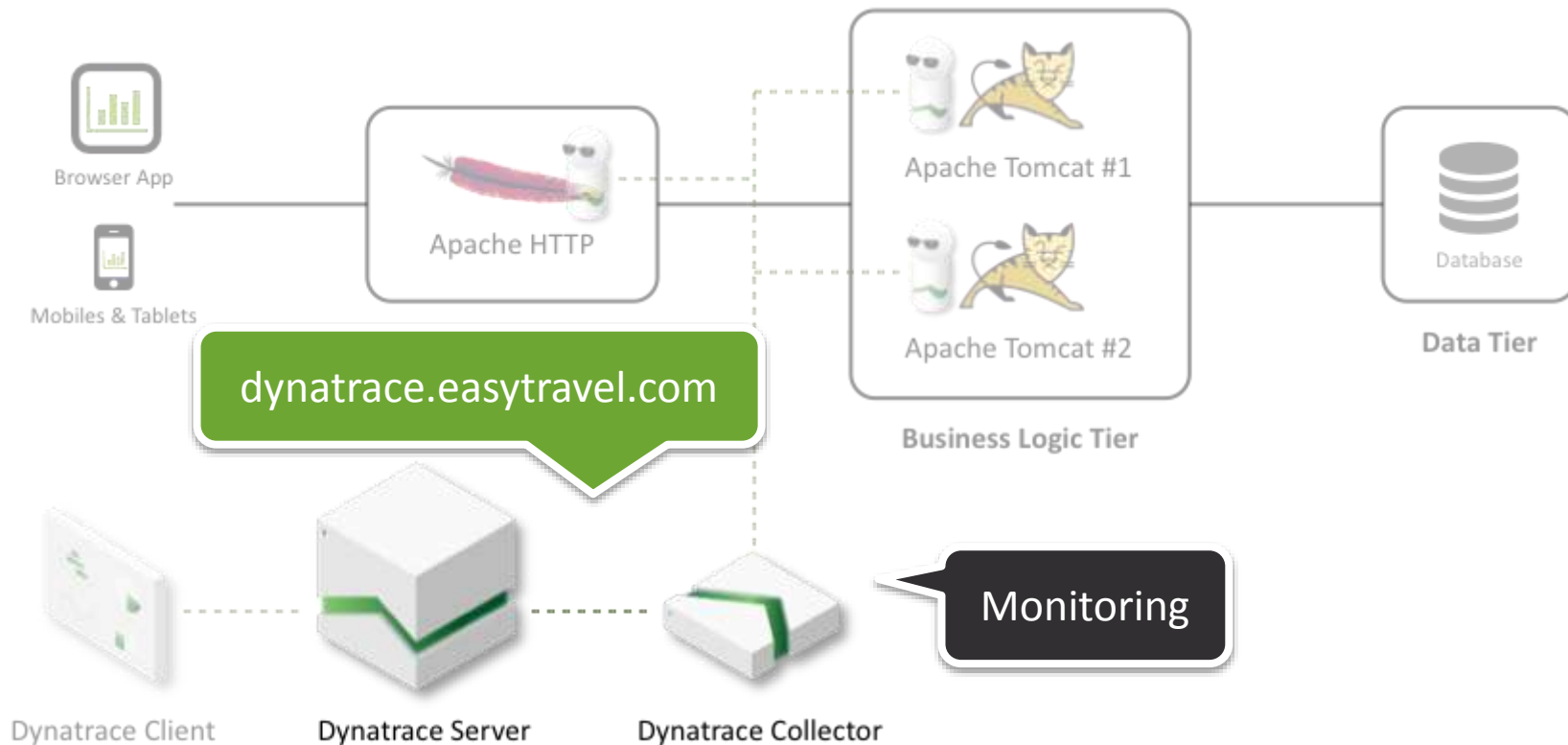


A screenshot of the Ansible Galaxy website. The browser address bar shows 'https://galaxy.ansible.com/list#/roles'. The page title is 'ANSIBLE GALAXY'. The navigation bar includes links for 'About', 'Explore', 'Browse Roles', 'Browse Users', 'Add a Role', and a user profile 'dynatrace'. The main section is titled 'Browse Roles'. On the left, there is a 'Categories' sidebar with a list of categories: web, system, packaging, networking, monitoring, development, database:sql, database:nosql, database, and clustering. The search bar contains 'dynatrace-server'. The results table has columns for 'Role', 'Categories', and 'Description'. The first row shows the 'Dynatrace-Server' role, which is circled in red. It is categorized under 'monitoring' and has a description: 'An Ansible role for automated deployments of the Dynatrace Server.' Below the description, it shows 'Created on: 1/21/15 7:38 AM' and 'Modified: 3/18/15 9:21 AM'. The author is listed as 'dynatrace'. At the bottom right, it says 'Page 1 of 1. 1 total roles.'



2. Specify Environment

Identify Hosts





3. Execute Playbook



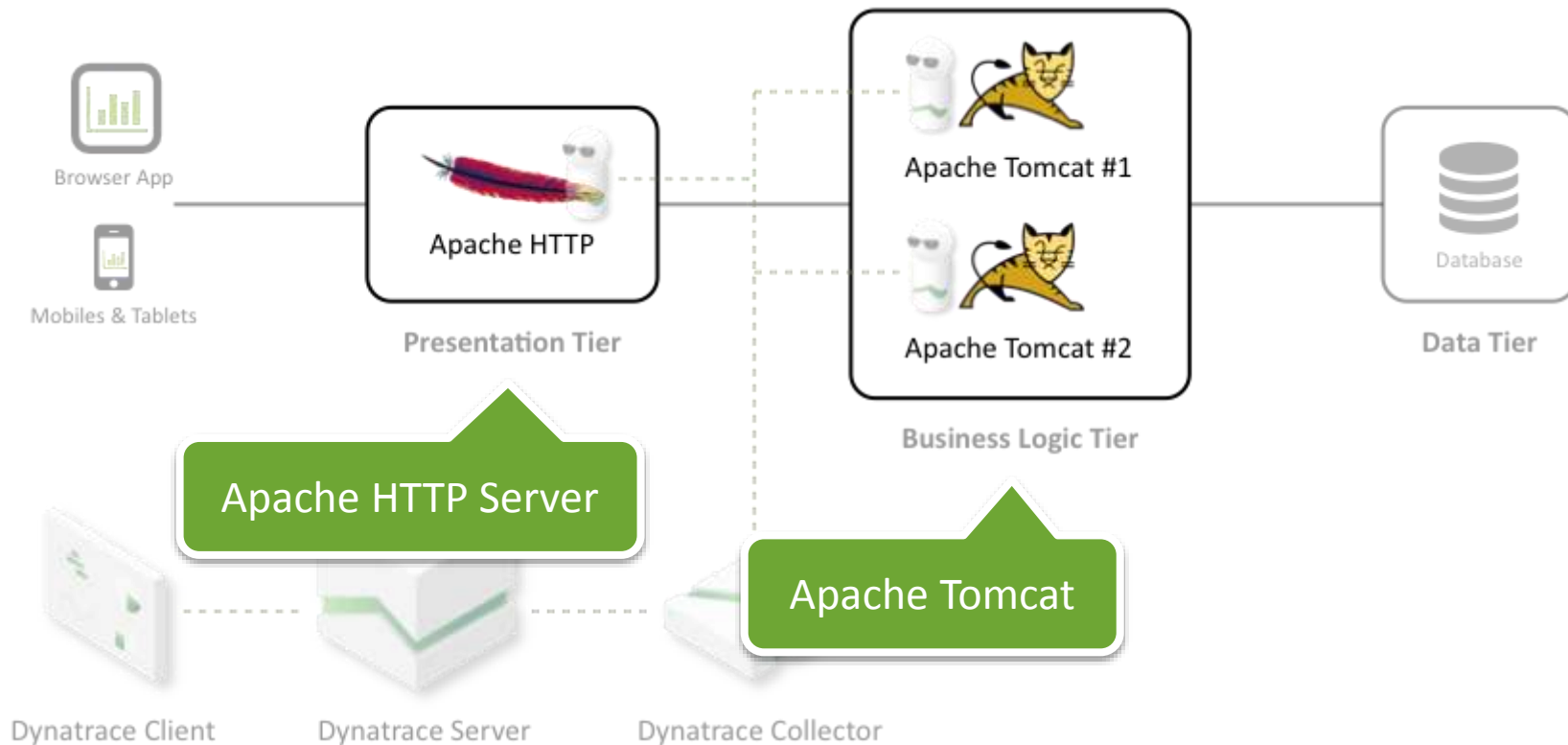
Deployment Scenario: Inject Agents



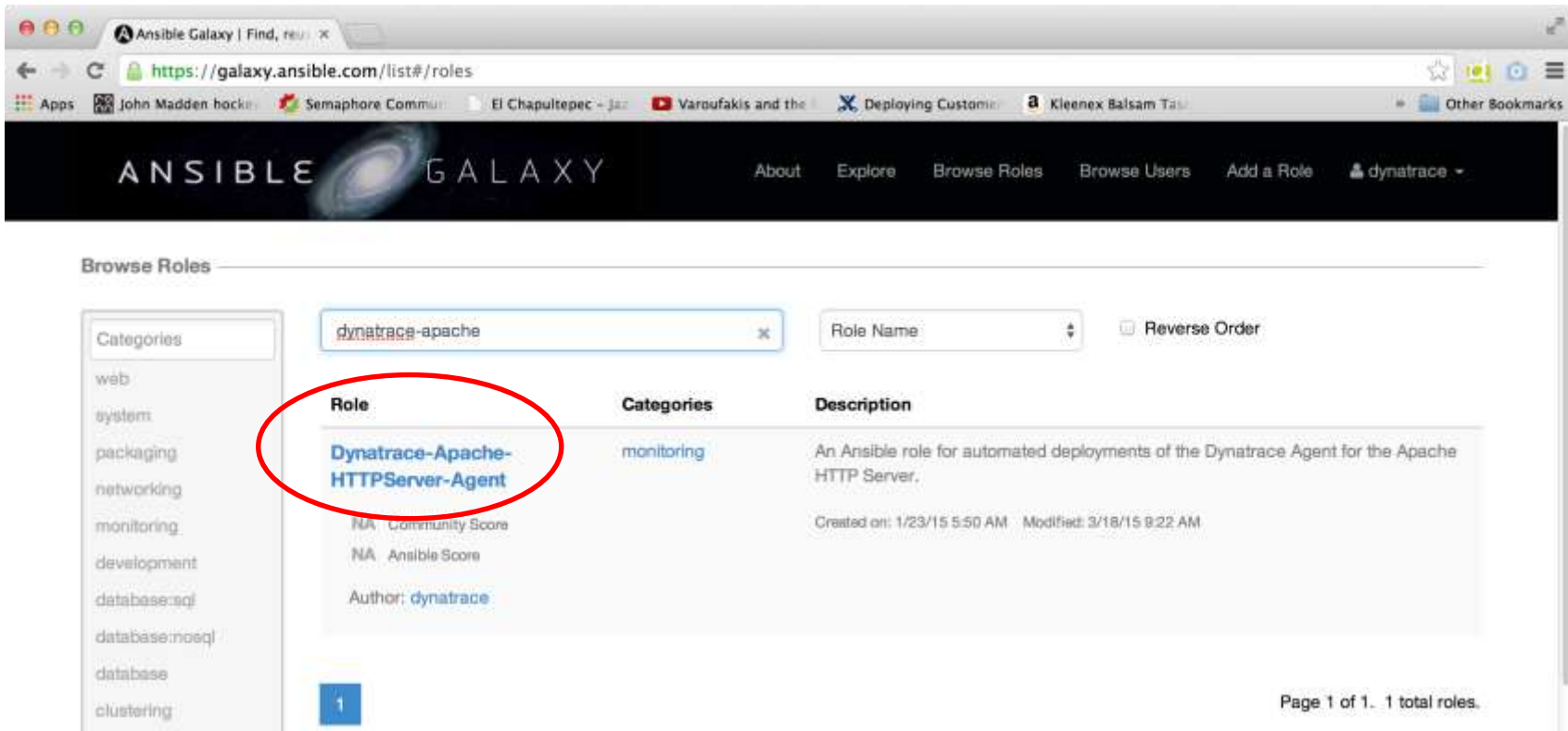


1. Gather Dependencies

Identify Technologies



Ansible Galaxy: Dynatrace-Apache-HTTPServer-Agent



The screenshot shows the Ansible Galaxy website interface. The browser address bar displays `https://galaxy.ansible.com/list#/roles`. The page header includes the 'ANSIBLE GALAXY' logo and navigation links: 'About', 'Explore', 'Browse Roles', 'Browse Users', 'Add a Role', and a user profile for 'dynatrace'. The main section is titled 'Browse Roles'. On the left, a sidebar lists categories: 'web', 'system', 'packaging', 'networking', 'monitoring', 'development', 'database:sql', 'database:nosql', 'database', and 'clustering'. The search bar contains the text 'dynatrace-apache'. Below the search bar, a table lists roles. The first role, 'Dynatrace-Apache-HTTPServer-Agent', is highlighted with a red circle. This role is categorized under 'monitoring' and has a description: 'An Ansible role for automated deployments of the Dynatrace Agent for the Apache HTTP Server.' It also shows creation and modification dates (1/23/15 5:50 AM and 3/18/15 9:22 AM) and the author 'dynatrace'. The bottom right corner indicates 'Page 1 of 1. 1 total roles.'

Role	Categories	Description
Dynatrace-Apache-HTTPServer-Agent	monitoring	An Ansible role for automated deployments of the Dynatrace Agent for the Apache HTTP Server. Created on: 1/23/15 5:50 AM Modified: 3/18/15 9:22 AM Author: dynatrace

Ansible Galaxy: Dynatrace-Tomcat-Agent



The screenshot shows the Ansible Galaxy website interface. The browser address bar displays `https://galaxy.ansible.com/list#/roles`. The page header includes the 'ANSIBLE GALAXY' logo and navigation links: 'About', 'Explore', 'Browse Roles', 'Browse Users', 'Add a Role', and a user profile for 'dynatrace'. The main section is titled 'Browse Roles'. On the left, there is a 'Categories' sidebar with a list of categories: web, system, packaging, networking, monitoring, development, database:sql, database:nosql, database, and clustering. The search bar contains the text 'dynatrace-tomcat'. Below the search bar, a table lists the roles. The first role, 'Dynatrace-Tomcat-Agent', is circled in red. The table has columns for 'Role', 'Categories', and 'Description'. The 'Role' column for the first entry shows 'NA Community Score', 'NA Ansible Score', and 'Author: dynatrace'. The 'Categories' column shows 'monitoring'. The 'Description' column provides details about the role's purpose and creation/modification dates.

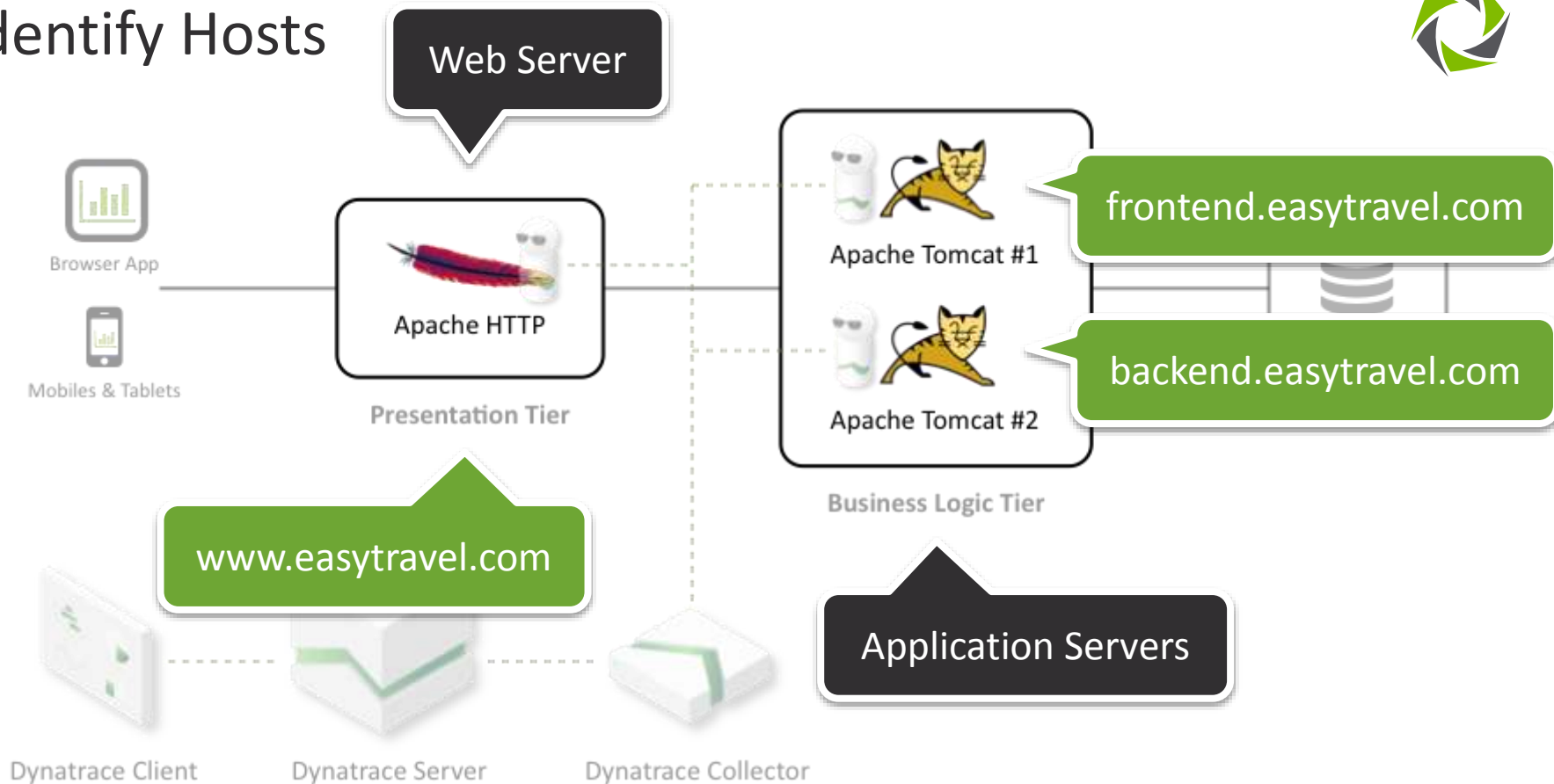
Role	Categories	Description
Dynatrace-Tomcat-Agent NA Community Score NA Ansible Score Author: dynatrace	monitoring	An Ansible role for automated deployments of the Dynatrace Java Agent for Apache Tomcat. Created on: 1/22/15 11:29 AM Modified: 3/18/15 9:22 AM

Page 1 of 1. 1 total roles.



2. Specify Environment

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

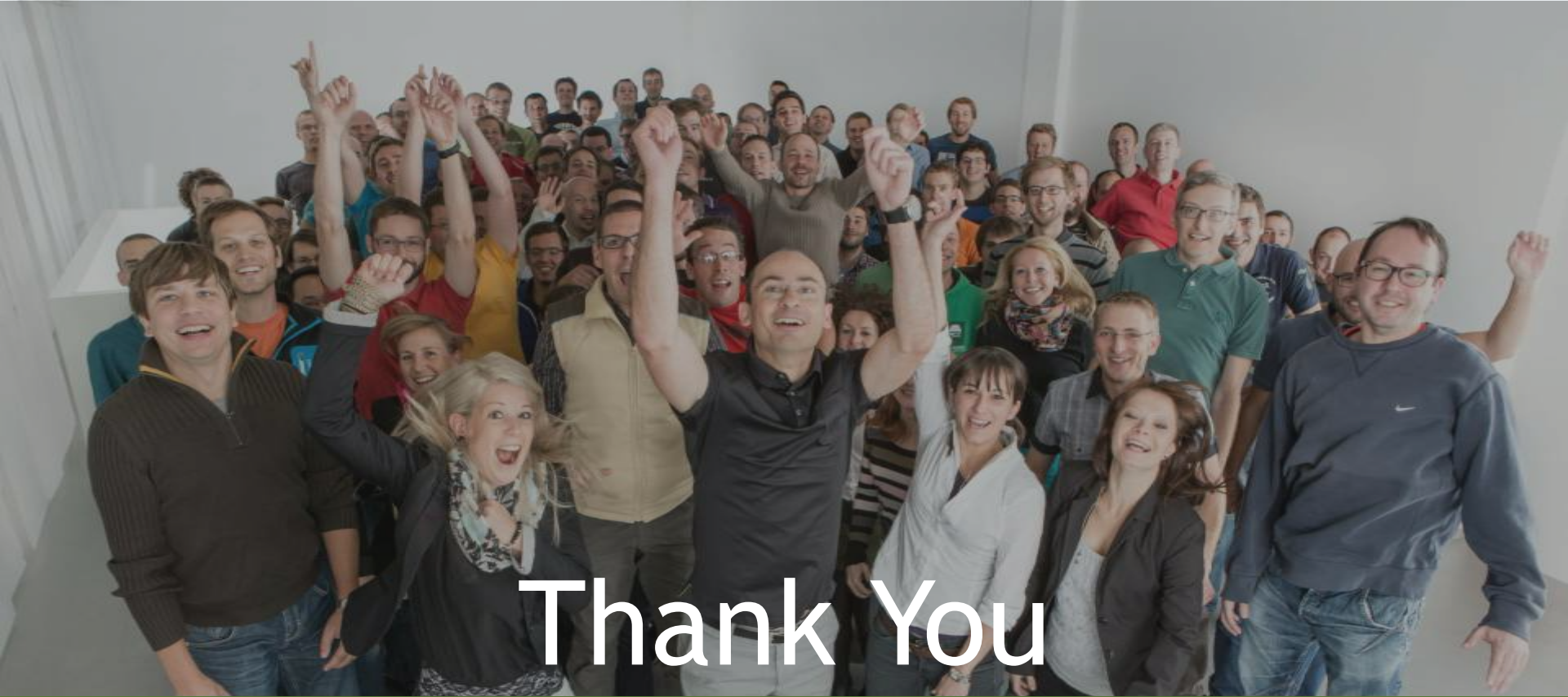
- » [Continuous Delivery 101: Automated Deployments](#)
- » [How to Automate Enterprise Application Monitoring with Ansible](#)

Presentations

- » [Automated Deployments: Hands-On Training](#)
- » [Dynatrace Inside Continuous Delivery](#)

Tutorials

- » [Automated Deployments with Dynatrace and Ansible](#)



Thank You

www.dynatrace.com