Oracle Cloud Infrastructure

Study Guide

Infrastructure as Code

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ORACLE

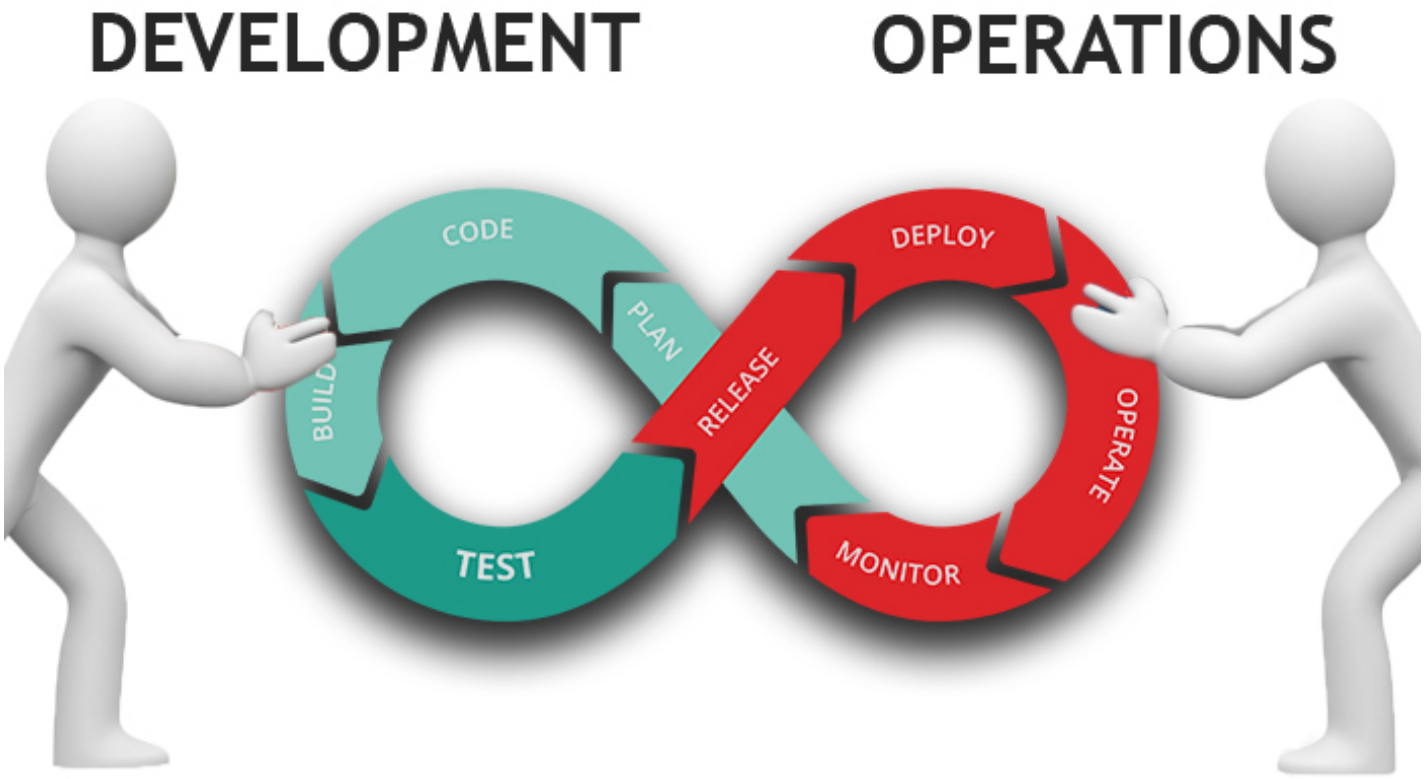
Infrastructure as Code

Infrastructure as Code (IaC)

In this chapter we will cover the following topics:

- The Context for DevOps and Infrastructure as Code
- The Case for Infrastructure as Code
- Infrastructure as Code Tools
- Positioning of Terraform

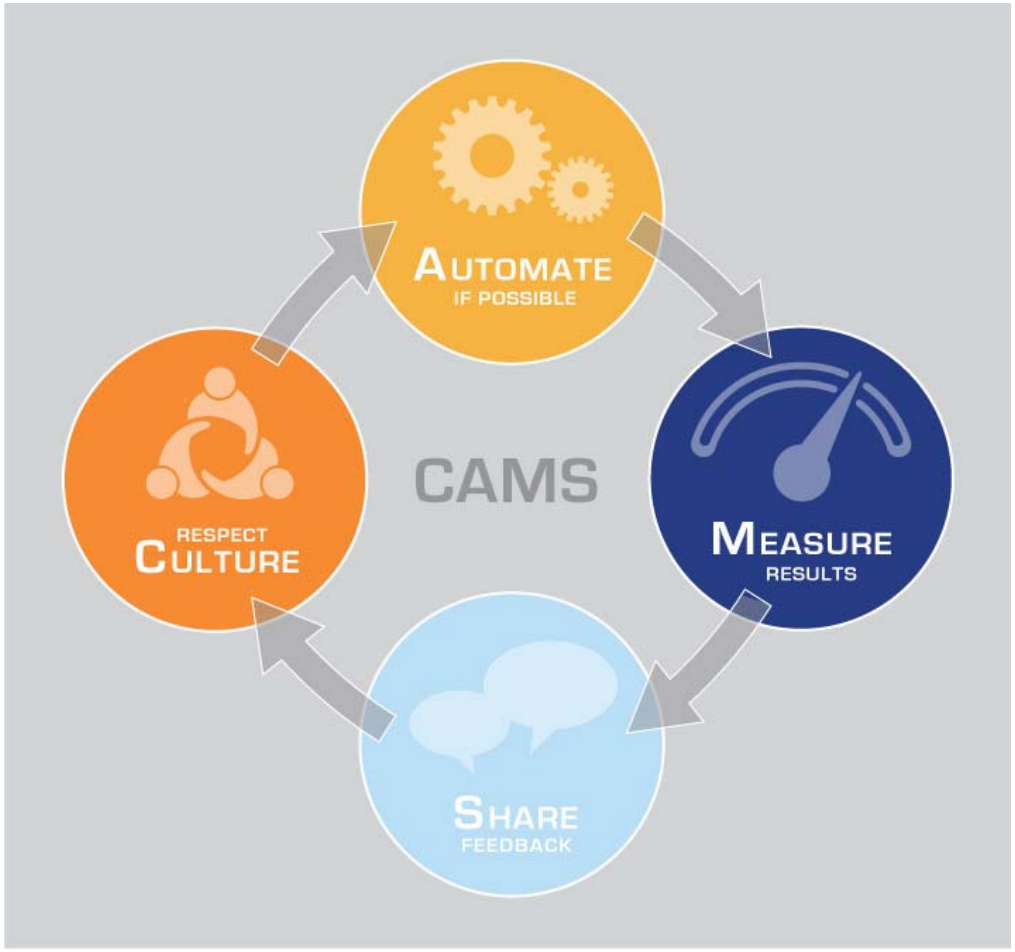
The Context for DevOps and Infrastructure as Code



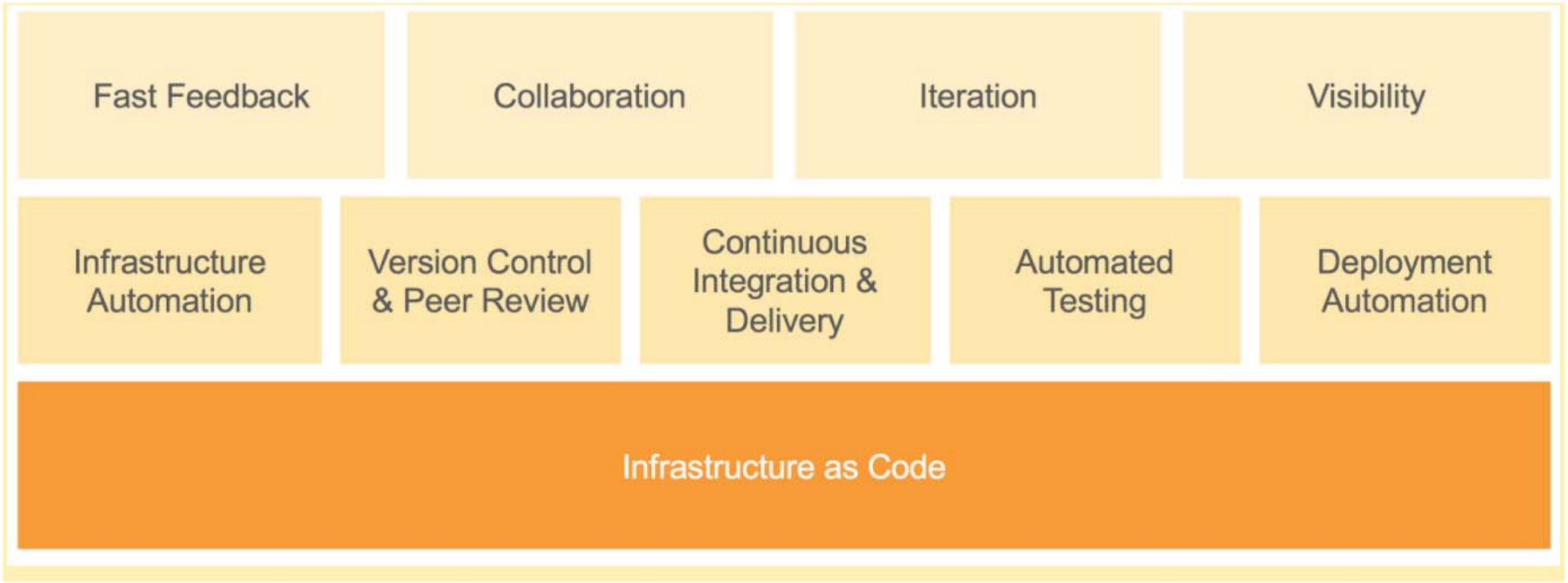
The Rise of APIs

Agile Software Development

The CAMS Framework

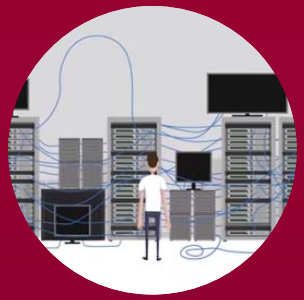


Infrastructure as Code Domains



(Source: Puppet Labs)

The Case for Infrastructure as Code (1)



Server Sprawl

- Cloud and virtualization make provisioning new servers easy
- Number of servers keeps growing, number of admins remains constant
- Servers get barely managed

Configuration Drift

- Server differences happen over time
- Manual changes and software updates
- Inconsistent operations
- Undocumented procedures

Snowflake Servers

- A snowflake server is different from any other server on your network.
- Behaves in a special way and nobody knows why.
- Server cannot be reproduced hence a snowflake.

Infrastructure Challenges

The Case for Infrastructure as Code (2)

Fragile Infrastructure

- Easily disrupted and not easily fixed.
- Don’t touch that server.
- Don’t point at it.
- Don’t even look at it.

Automation Fear

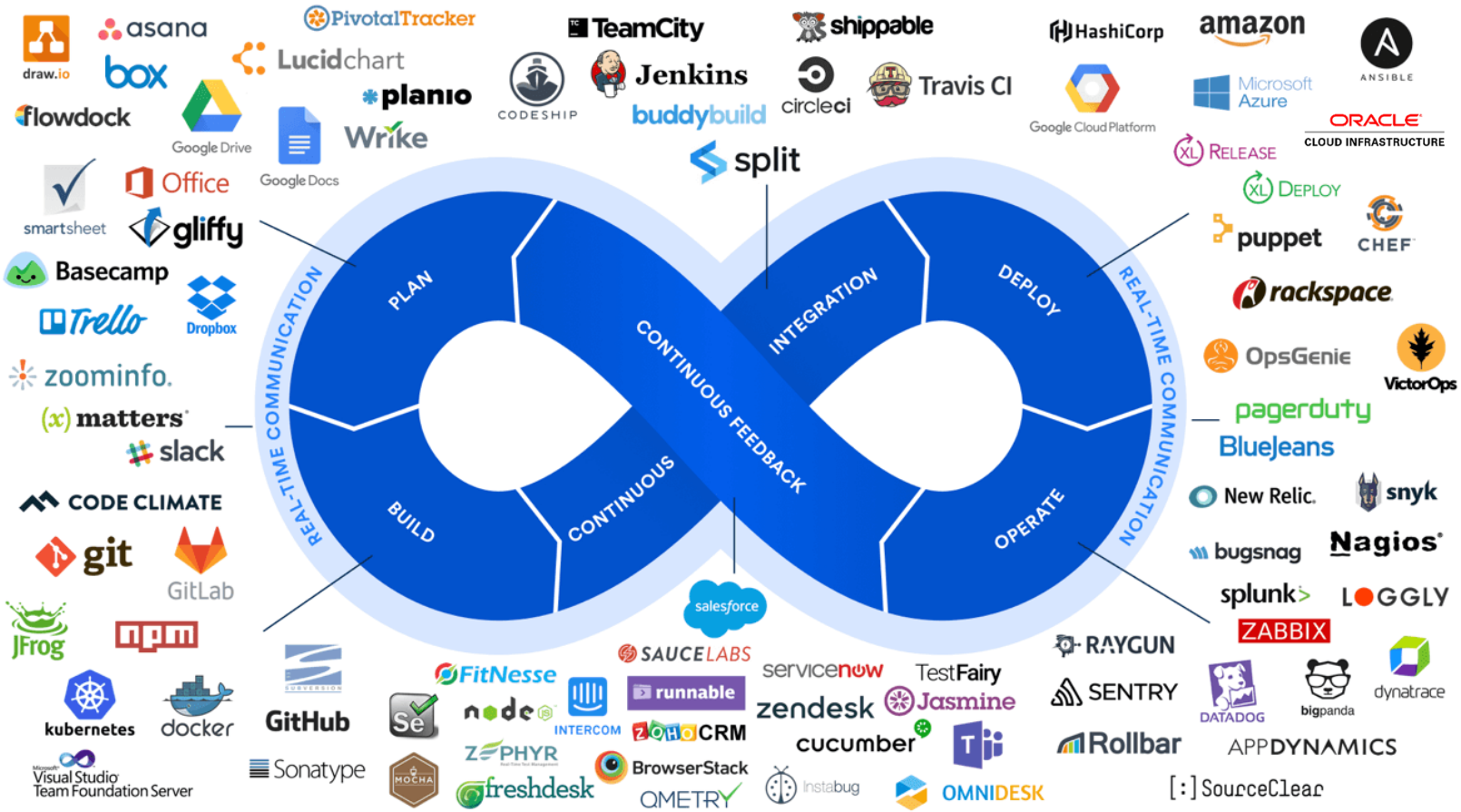
- Lack of confidence in automation tools due to the snowflake servers
- Manual changes lead to inconsistencies so the automation tool might break something.

Erosion

- Infrastructure simply decays over time due to
- OS upgrades and patches
- Process crashes
- Hardware failures

Infrastructure Challenges

DevOps/IaC Tools



Infrastructure as Code Categories of Tools

Ad-hoc Scripts

BASH THE BOURNE-AGAIN SHELL

python™

Configuration Management Tools

CHEF

puppet labs

ANSIBLE

SALTSTACK

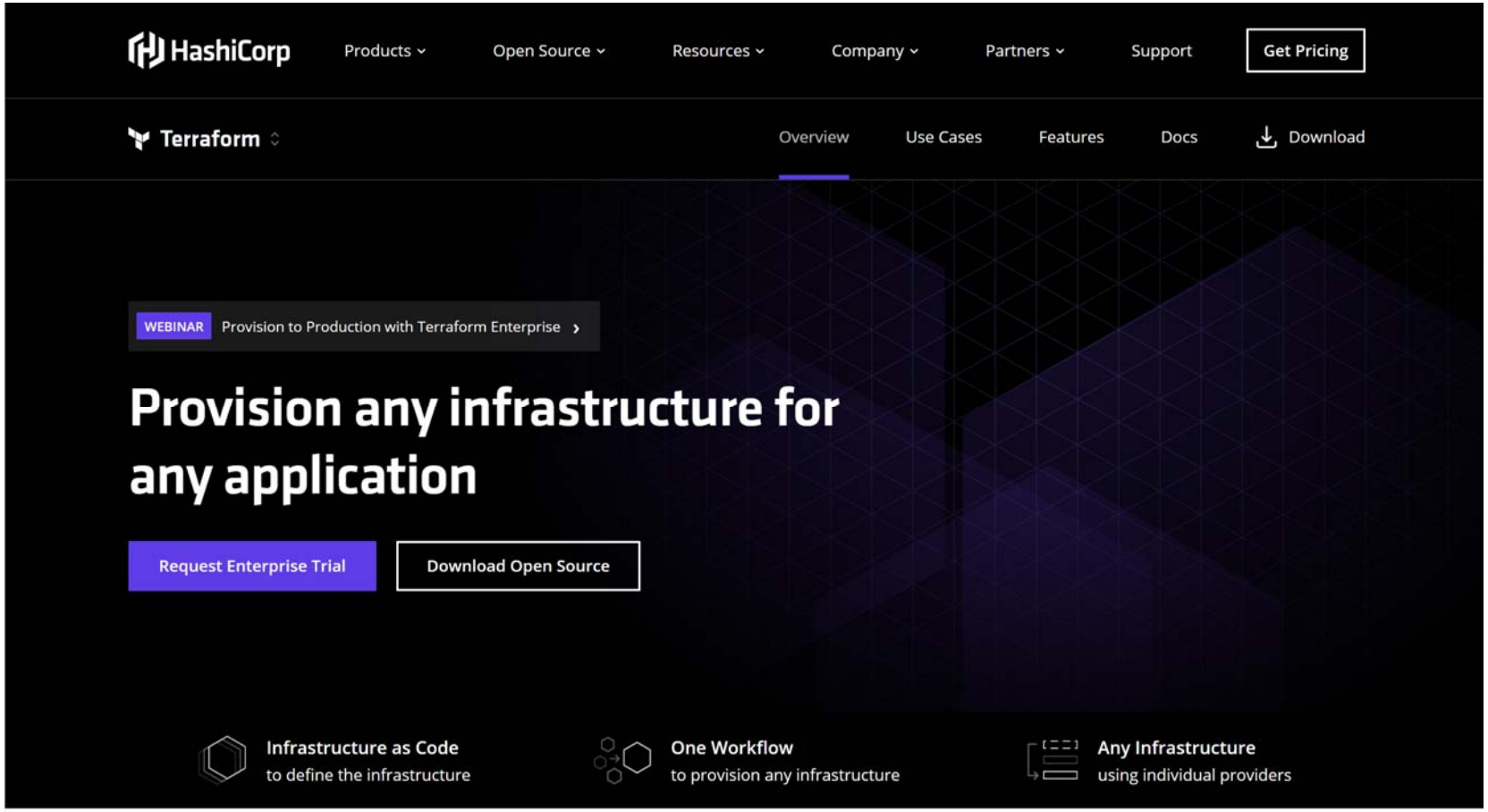
Server Templating Tools

HashiCorp Packer

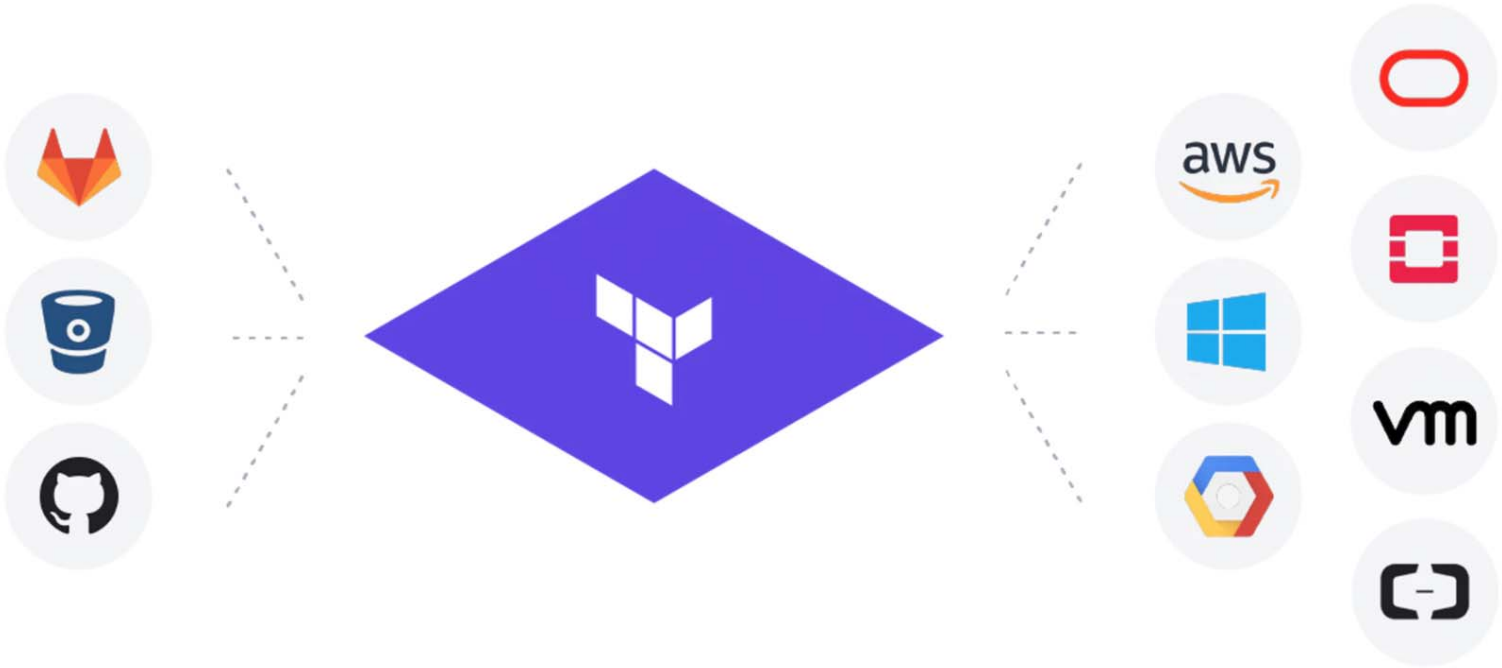
HashiCorp Vagrant

Server Provisioning Tools

Positioning of Terraform



Terraform Providers



Terraform Positioning (1)

INFRASTRUCTURE AS CODE

Define infrastructure as code to increase operator productivity and transparency.

COLLABORATE & SHARE

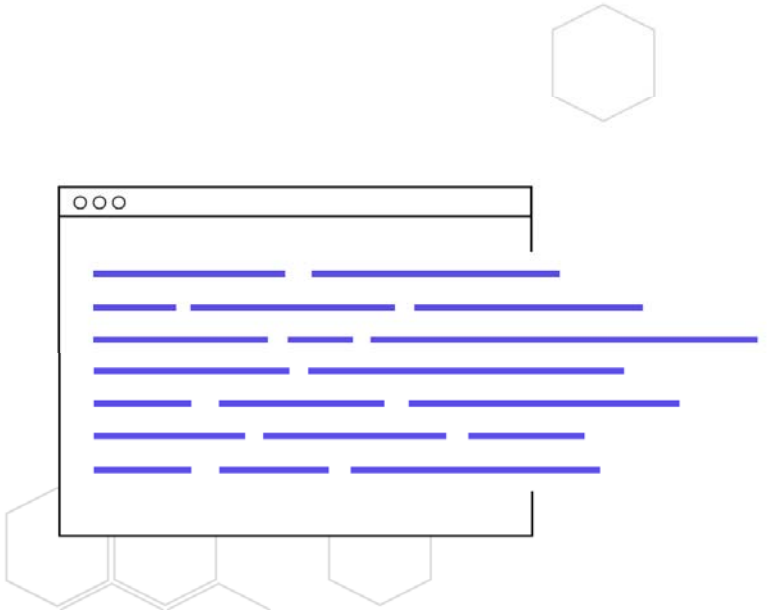
Terraform configuration can be stored in version control, shared, and collaborated on by teams of operators.

EVOLVE YOUR INFRASTRUCTURE

Track the complete history of infrastructure versions.

AUTOMATION FRIENDLY

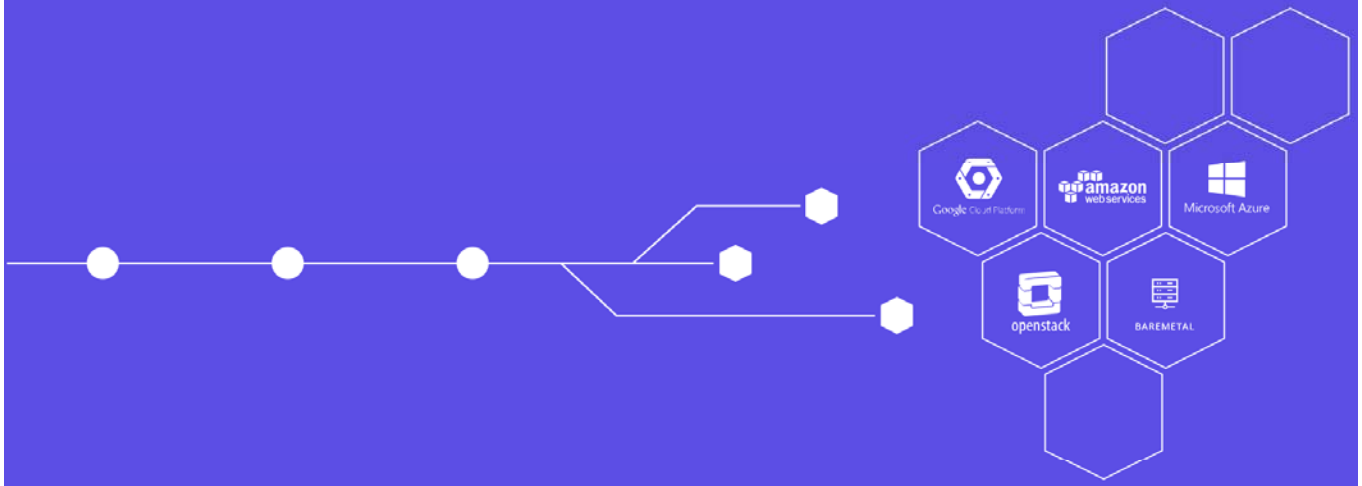
If it can be codified, it can be automated.



Terraform Positioning (2)

ONE SAFE WORKFLOW ACROSS PROVIDERS

Terraform provides an elegant user experience for operators to safely and predictably make changes to infrastructure.



MAP RESOURCE DEPENDENCIES

Understand how a minor change could have potential cascading effects across an infrastructure before executing that change. Terraform builds a dependency graph from the configurations, and walks this graph to generate plans, refresh state, and more.

SEPARATION OF PLAN & APPLY

Separating plans and applies reduces mistakes and uncertainty at scale. Plans show operators what would happen, applies execute changes.

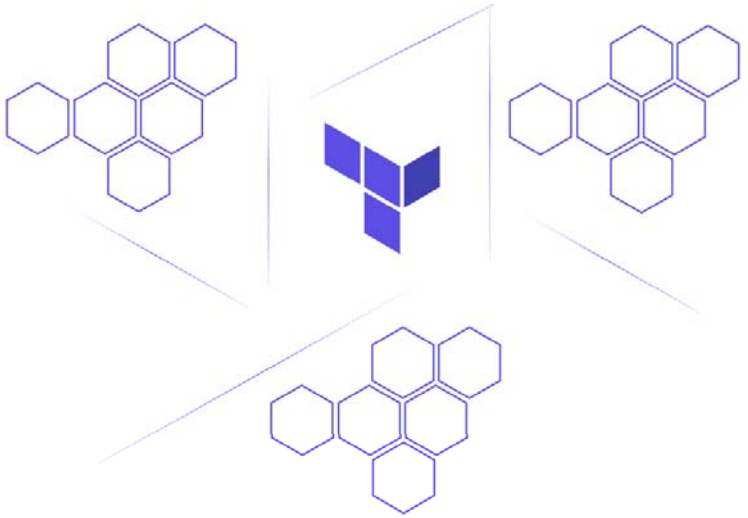
ONE SAFE WORKFLOW

Use Terraform to create resources across all major infrastructure providers (AWS, GCP, Azure, OpenStack, VMware, and more).

Terraform Positioning (3)

REPRODUCIBLE INFRASTRUCTURE

Terraform lets operators easily use the same configurations in multiple places to reduce mistakes and save time.



ENVIRONMENT PARITY

Use the same Terraform configuration to provision identical staging, QA, and production environments.

SHAREABLE MODULES

Common Terraform configurations can be packaged as modules and used across teams and organizations.

COMBINE MULTIPLE PROVIDERS CONSISTENTLY

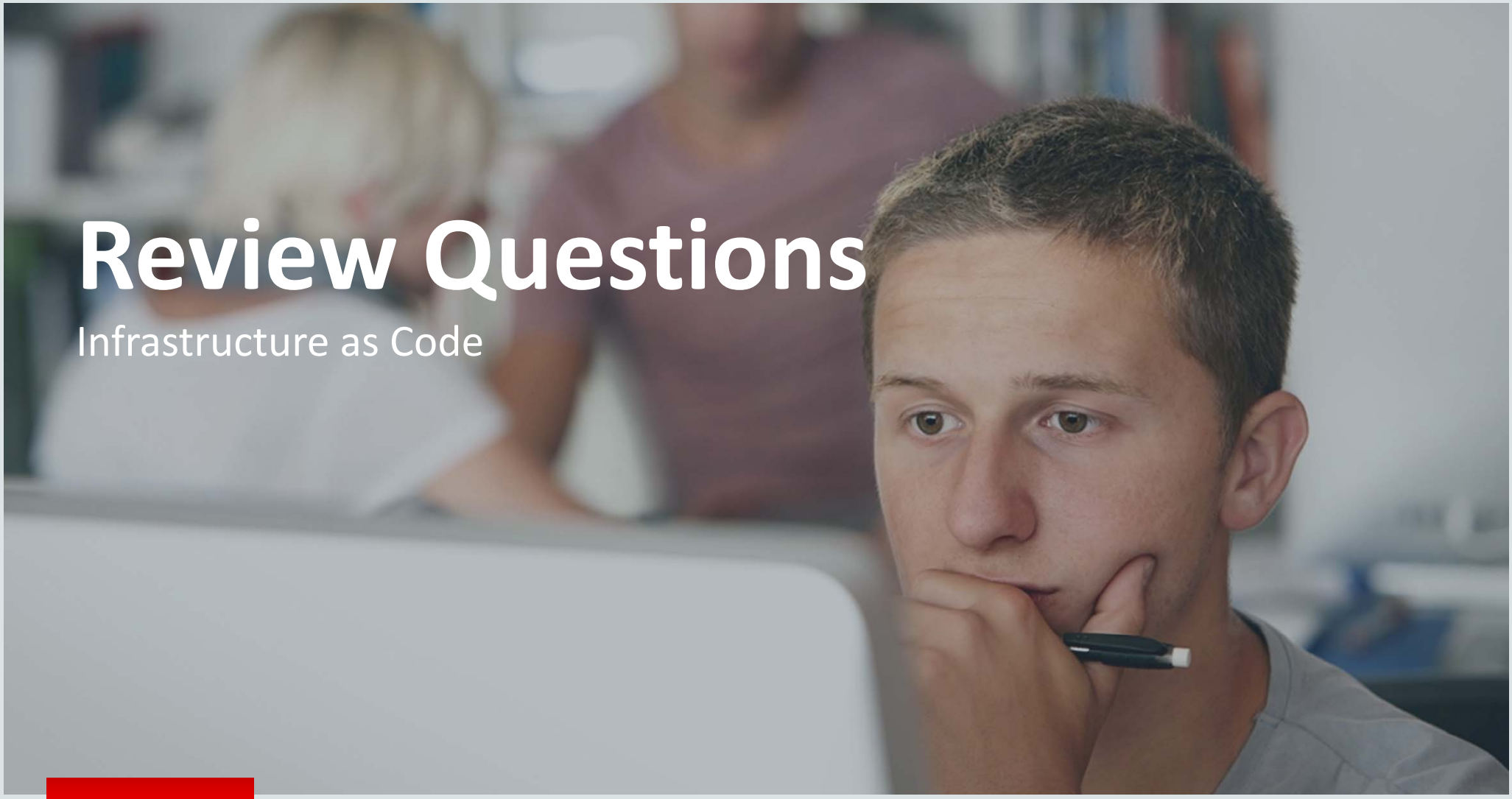
Terraform allows you to effortlessly combine high-level system providers. Launch a server from one cloud provider, add a DNS entry with its IP with a different provider. Built-in dependency resolution means things happen in the right order.

Terraform Snippet to create a VCN

```
1  resource "oci_core_virtual_network" "vcn1" {
2    cidr_block = "10.0.0.0/16"
3    dns_label = "vcn1"
4    compartment_id = "POCCOMP1"
5    display_name = "vcn1"
6  }
```

Review Questions

Infrastructure as Code



Review Questions for Infrastructure as Code (1)

1. What are the two trends that led to the rise of the DevOps movement?
   - **A.** Adoption of workflow computing.
   - **B.** Better and more mature API's
   - **C.** Adoption of agile practices
   - **D.** Rise of SOA framework

2. What is the name of the DevOps framework acronym coined by Willis and Edwards in 2010?
   - **A.** ASAP
   - **B.** RTFM
   - **C.** CAMS
   - **D.** RFI

Review Questions for Infrastructure as Code (2)

3. What are typical infrastructure challenges that are addresses with infrastructure as code?
   - **A.** Configuration Drift
   - **B.** Snowflake Servers
   - **C.** Automation Fear
   - **D.** All of the above.

4. What are tools typically used for configuration management?
   - **A.** PowerShell
   - **B.** Terraform
   - **C.** Chef
   - **D.** Puppet

5. Which of the following statements regarding Terraform is true?
   - **A.** Terraform was developed by Oracle corporation
   - **B.** Terraform only supports AWS and Microsoft Azure
   - **C.** Terraform is a server templating tool
   - **D.** Terraform supports more than 100 infrastructure providers


рахмат
danke
謝謝
ngiyabonga
spas
teşekkür ederim
Баярлалаа
mersi
kia ora
barka
welalin
tack
mahalo
tapadh leat
спасибо
faafetai lava
vinaka
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blagodaram
dank je
misaotra
paldies
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matondo
thank you
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