

Introducción a DevOps y Metodologías Afines

Infrastructure as code (IaC)



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AGENDA

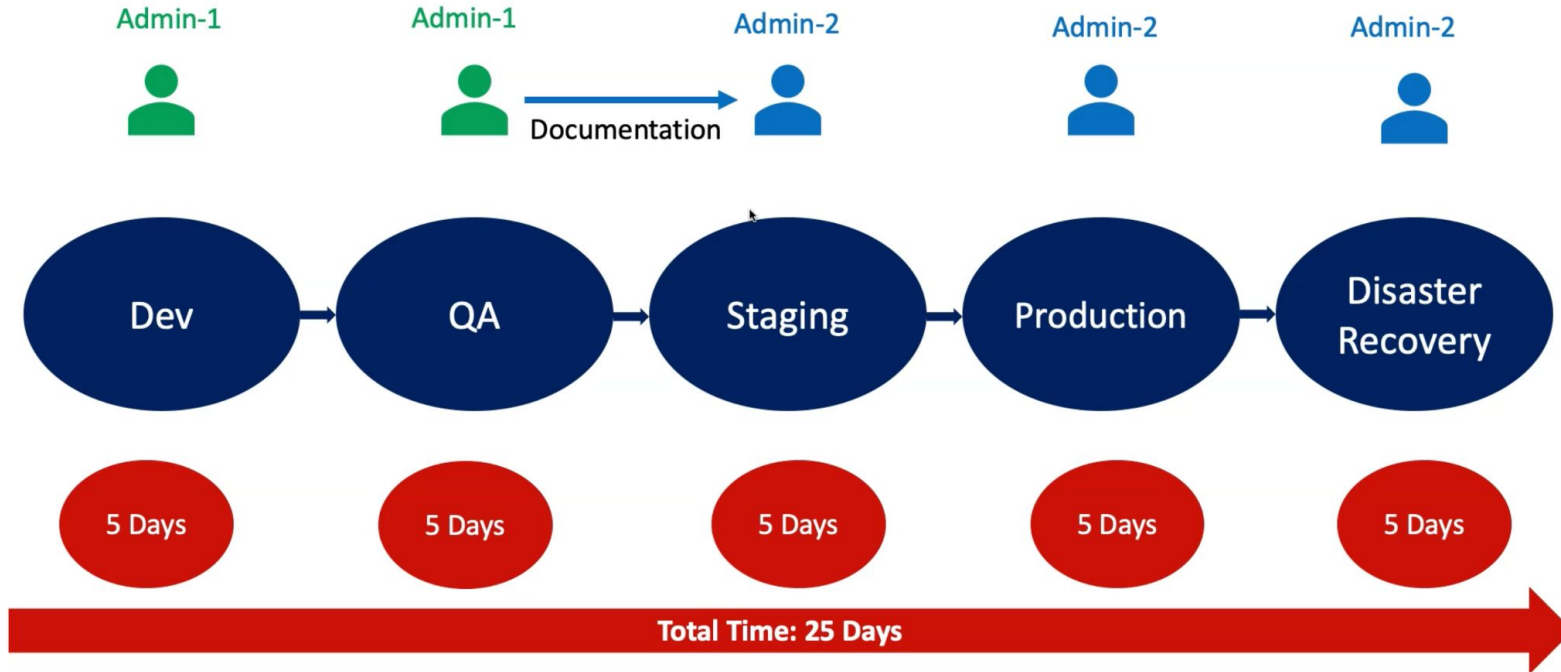
1. Old infra managing way vs new infra managing way
2. ¿Qué es IaC?
3. Herramientas
4. Terraform

Old infra managing way

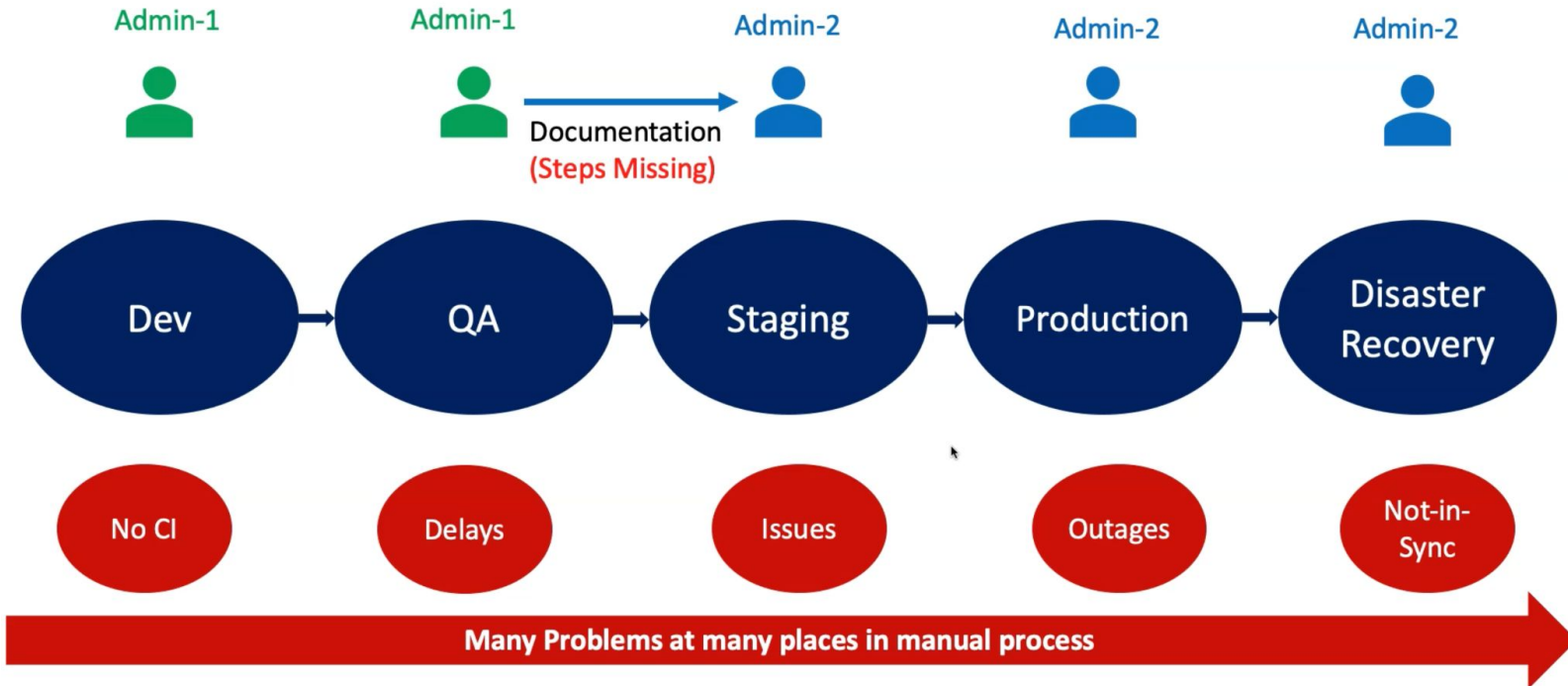
vs

new infra managing way

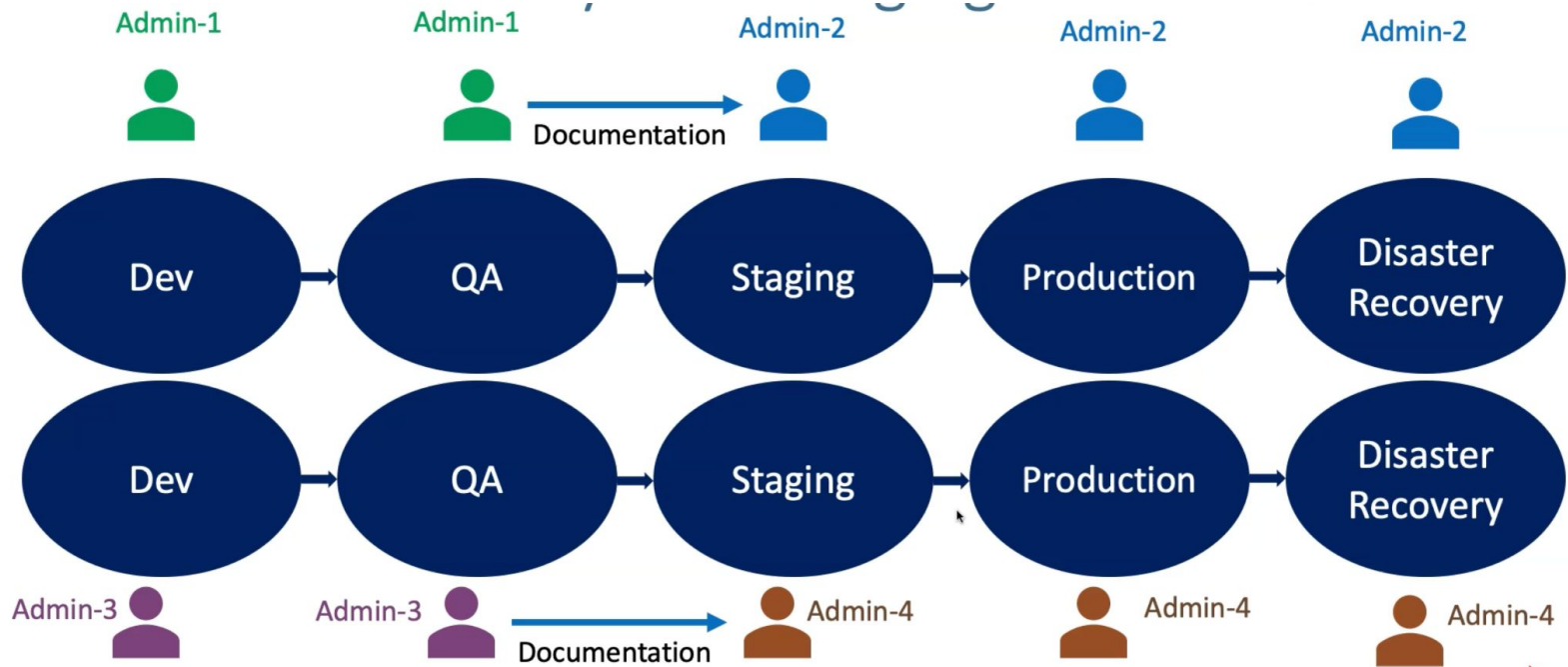
Old infra managing way



Old infra managing way

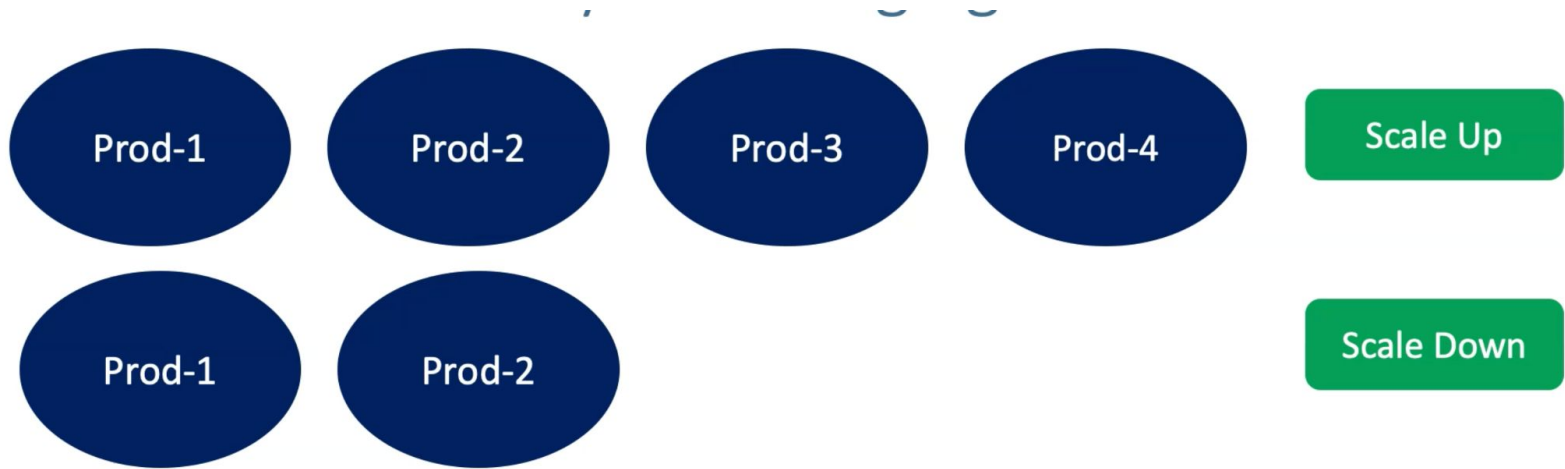


Old infra managing way



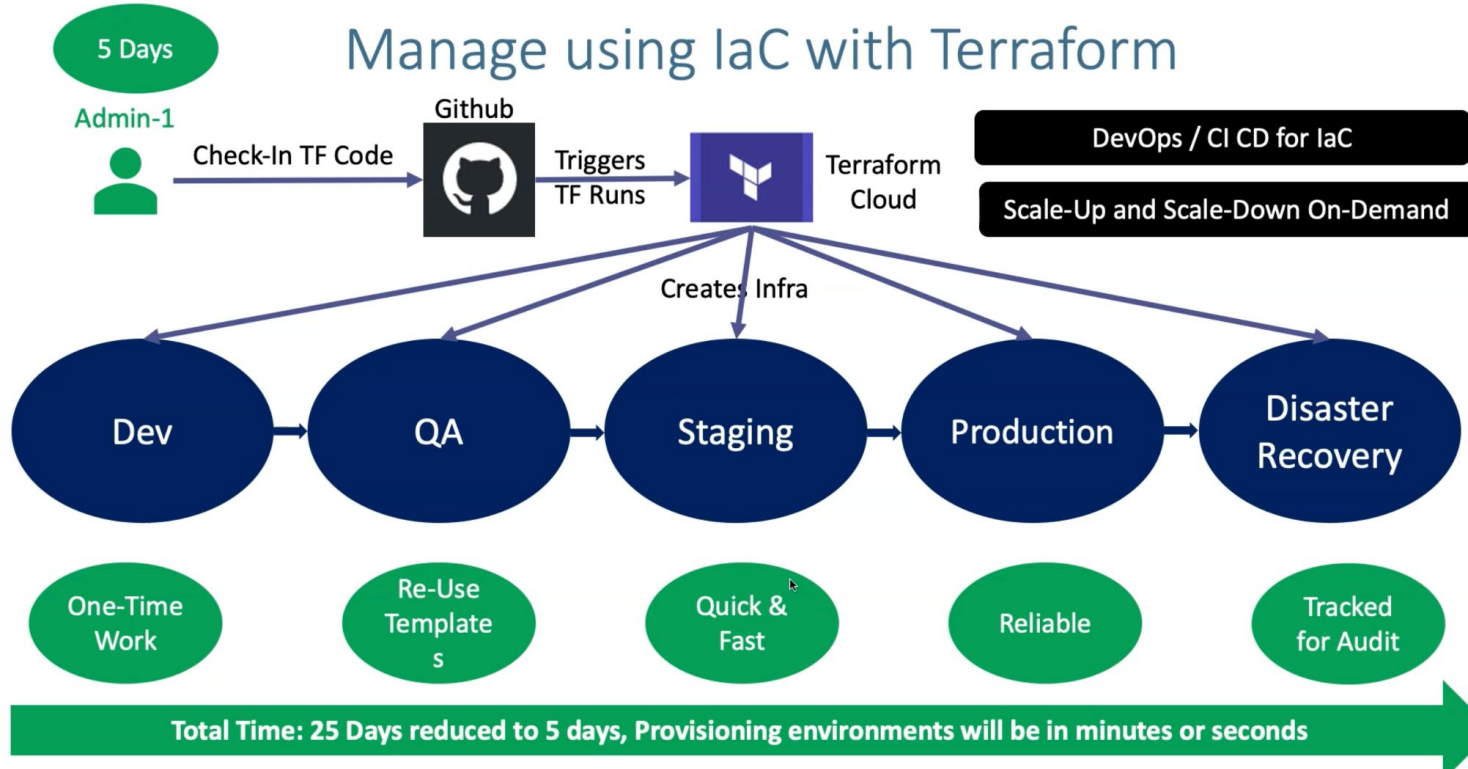
Infrastructure scalability – Workforce need to be increased to meet the timelines

Old infra managing way

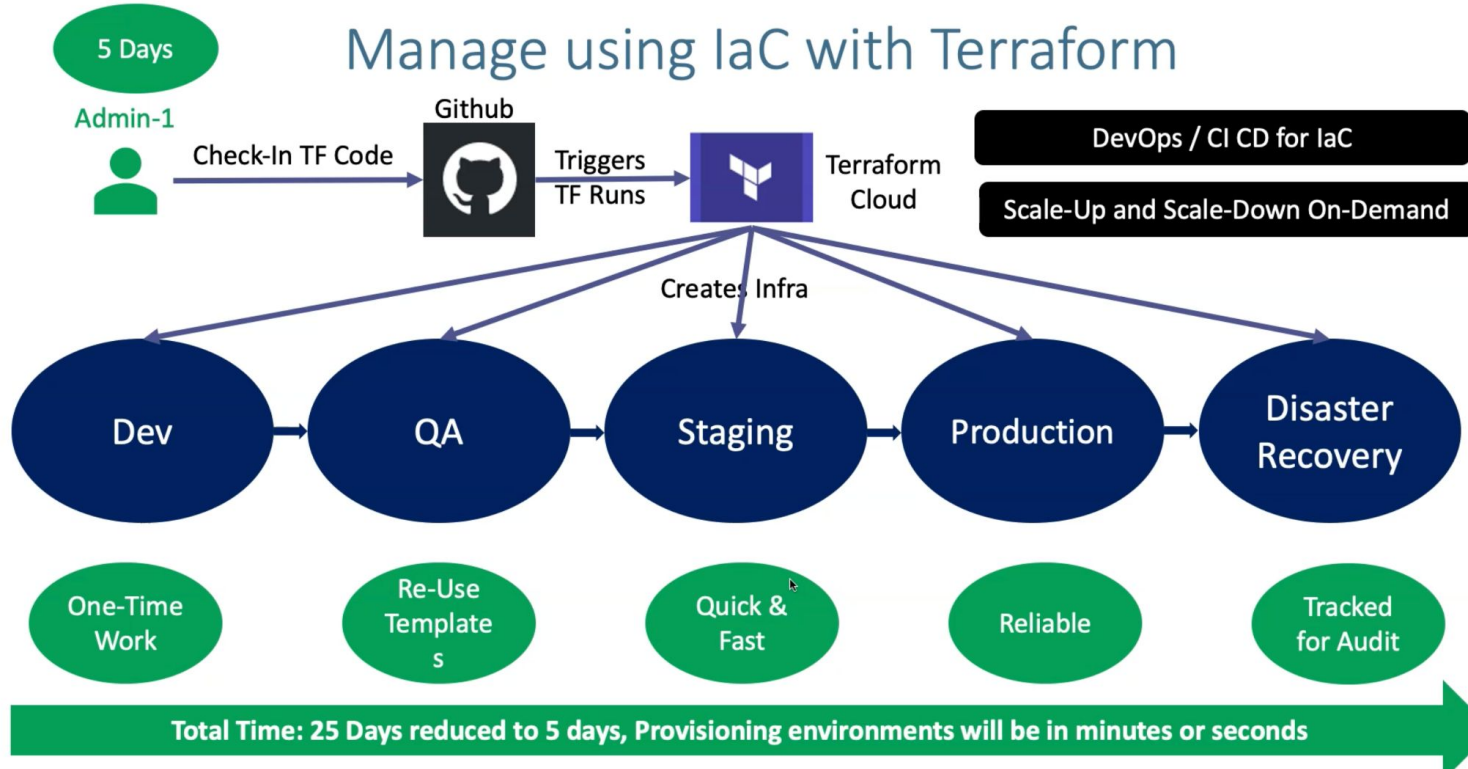


On-Demand Scale-Up and Scale-Down is not an option

New infra managing way



New infra managing way



New infra managing way

Visibility

laC serves as a very **clear reference** of what resources we created, and what their settings are. We don't have to **navigate** to the web console to check the parameters.

Stability

If you **accidentally** change the **wrong** setting or delete the **wrong** resource in the web console you can **break things**. laC helps **solve this**, especially when it is combined with **version control**, such as Git.

Scalability

With laC we can **write it once** and then **reuse it many times**. This means that one well written template can be used as the **basis for multiple services**, in multiple regions around the world, making it much easier to horizontally scale.

Security

Once again laC gives you a **unified template** for how to deploy our architecture. If we create one well **secured architecture** we can reuse it multiple times, and know that each deployed version is following the same settings.

Audit

Terraform not only creates resources it also **maintains the record** of what is created in real world cloud environments using its State files.

¿Qué es laC?



Infrastructure as Code (IaC)

Es el proceso de gestionar la infraestructura de forma automatizada, aplicando los mismos principios y prácticas que los equipos de desarrollo aplican a la hora de escribir código.



Recursos



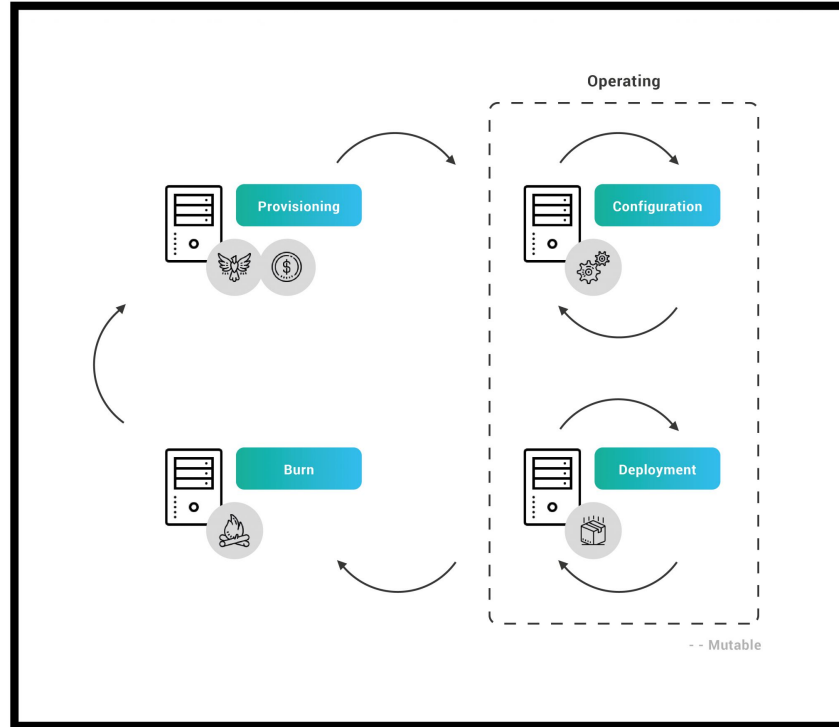
Grandes empresas



NETFLIX



Aprovisionamiento, configuración y implementación

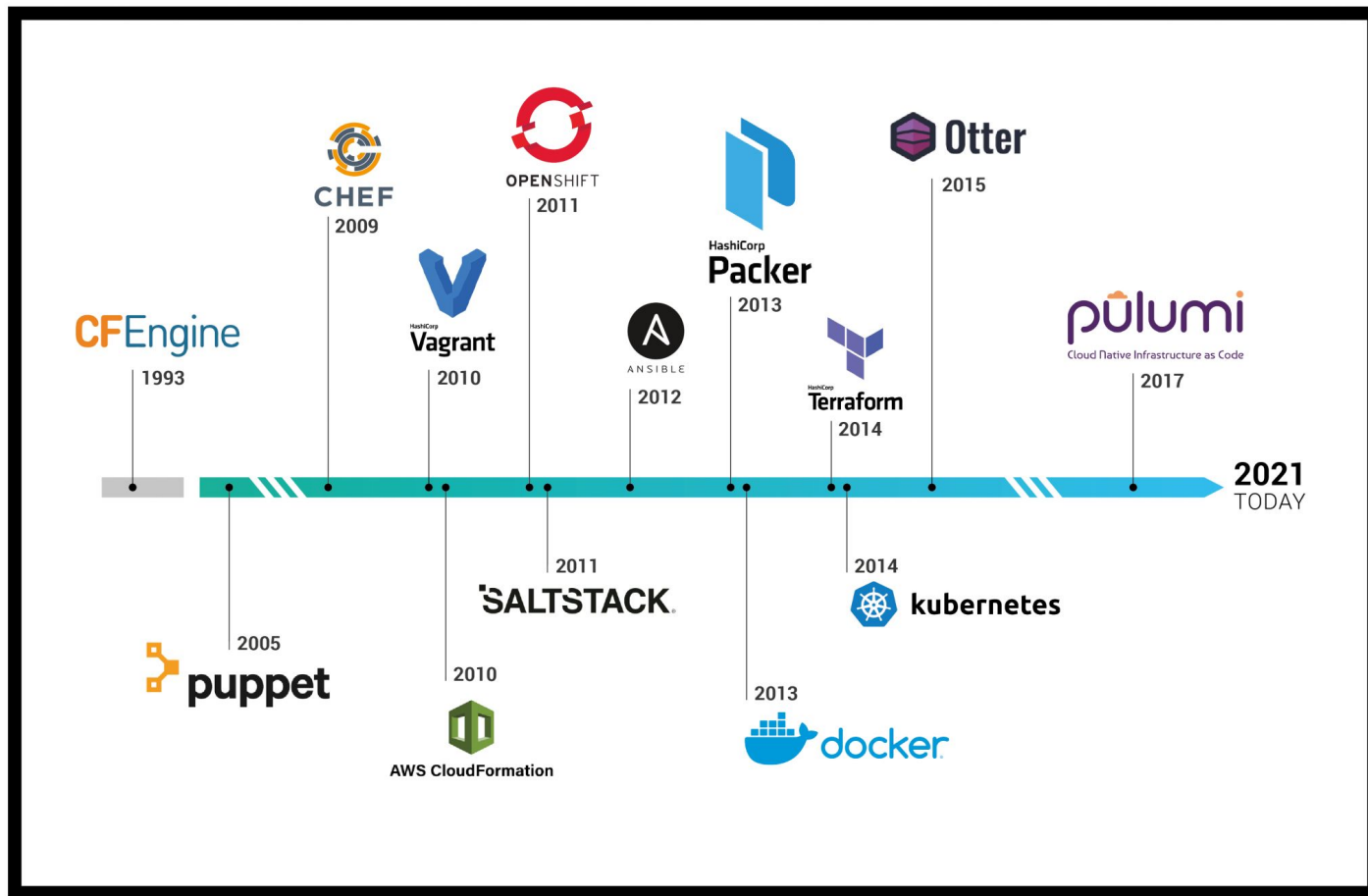


Aprovisionamiento, configuración y implementación

„The result is a unique snowflake – good for a ski resort, bad for a data center.“ – Martin Fowler

„A server should be like a phoenix, regularly rising from the ashes“ – Martin Fowler





Las diferentes fases

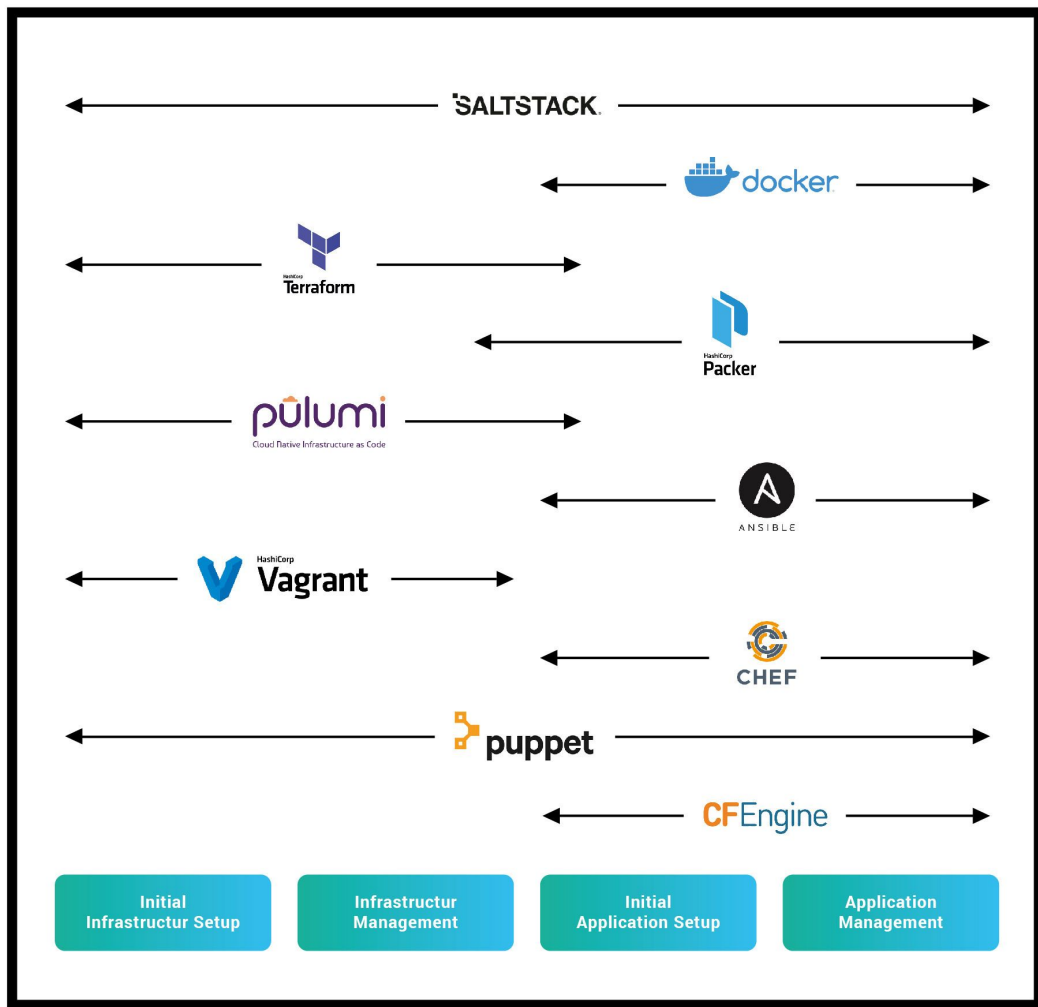
Initial setup phase

- Provisionar la infraestructura
- Configuración de la infraestructura
- Instalación inicial de software
- Configuración inicial del software

Maintaining phase

- Ajustes en la infraestructura
- Eliminación y adición de componentes
- Actualización de software
- Reconfiguración de software





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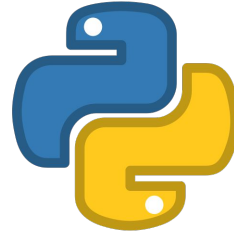


Los diferentes tipos de laC

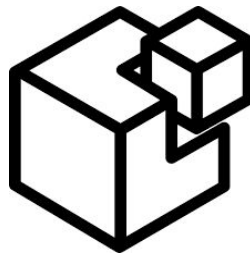


Scripts

```
1
2 #!/bin/bash
3
4 # Update Package Manager
5 sudo apt-get update
6
7 # Install Apache
8 sudo apt-get install -y apache2
9
10 # Start Apache
11 sudo service apache2 start
12
```



Configuration management tools



```
1  
2 - hosts: apache  
3 sudo: yes  
4 tasks:  
5 - name: install apache2  
6 apt: name=apache2 update_cache=yes state=latest  
7
```

Templating tools





```
1  
2 FROM ubuntu:latest  
3 RUN apt-get -y update && \  
4     apt-get install -y apache2  
5 ENTRYPOINT ["/usr/sbin/apache2"]  
6 CMD ["-D", "FOREGROUND"]  
7
```



Herramientas







Implementaciones IaC

Examples of “Infrastructure as Code” implementations		
vRealize Automation 	Template: Cloud template Target: Multiple Clouds Cloud Agnostic	resources: example-vm: type: Cloud.AWS.EC2.Instance properties: image: Ubuntu-1
AWS CloudFormation 	Template: CFT Target: AWS	"Resources" : { "example-vm": { "Type": "AWS::EC2::Instance", "Properties": { "ImageId" {
Azure Resource Manager 	Template: ARM template Target: Azure	"resources": [{ "type": "Microsoft.Compute/virtualMachines", "name": "example-vm",
Terraform 	Template: Terraform configuration Target: Multiple Clouds	resource "aws_instance" "example-vm" { ami = "ami-0c55b172cbfefa1f0" instance_type = "t2.micro" }



Implementaciones Configuration management

Examples of “Configuration Management” implementations		
<p>vRealize Automation SaltStack Config</p> 	Config: Template	nginx: service.running: - enable: True
<p>Puppet</p> 	Config: Manifest	class running_service { service { 'nginx': ensure => 'running', } }
<p>Chef</p> 	Config: Recipe	service "nginx" do supports :status => true action :start End
<p>Ansible</p> 	Config: Playbook	handlers: - name: start nginx service: name: nginx state: present

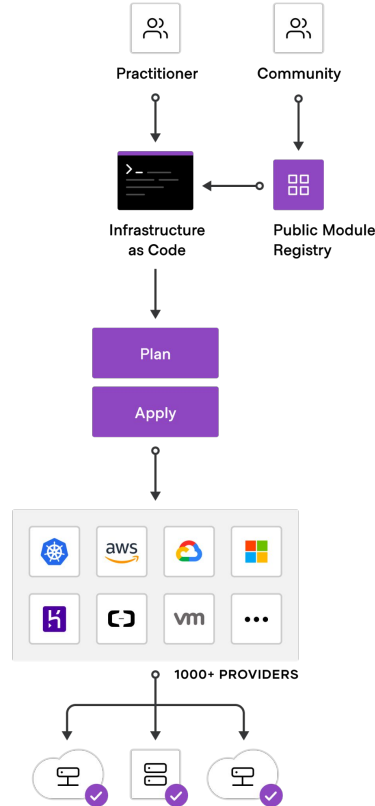


Templating tools

Terraform



¿Por qué Terraform?



Terraform Workflow

1

init

terraform init

2

validate

terraform validate

3

plan

terraform plan

4

apply

terraform apply

5

destroy

terraform destroy



Terraform Workflow

