

Infrastructure As Code

What is Infrastructure?

- Raw resources
 - Servers / Compute / Pods
 - Storage
 - Networking
- Managed Services
 - Databases
 - Queues
 - File storage
 - Serverless Functions

What is Code?

- Automatable
- Configurable
- Reusable
- Not (necessarily) a programming language

What is Infrastructure as Code?

A framework for defining infrastructure alongside code so it can be managed and deployed programmatically

Why Bother?

- Modern Cloud Services are Overwhelmingly Complex and Feature Rich
- Created and Changed by many developers / operators
- Moves state from GUI to config / code
- Discover unexpected changes
- Applies minimal changes to move from known to desired state

Popular Frameworks

- Terraform / Open Tofu
- AWS Cloudformation
- Pulumi
- Ansible
- Chef / Puppet



Pulumi

Pulumi: Infrastructure as Actual Code

- Python
- Typescript
- Go
- .Net
- Java
- Yaml

Pulumi: Supported Infrastructure Providers

- Cloud Providers
 - AWS, GCP, Azure, OVHCloud, Hetzner...
- Databases
 - Atlas, MySQL, Elastic, Clickhouse...
- Many more
 - Gitlab, Github, Cloudflare, ACME...

Pulumi: Concepts

- Providers
 - API for interacting with infrastructure service
- Backends
 - Where state is stored
- Stacks
 - Separate environments / groups
- Imports
 - Manage existing infrastructure

Pulumi: Concepts Continued

- Exports
 - Infrastructure depending on each other
- Refresh
 - Comparing expected state to actual state
- Secrets & Config
 - Managing environment safely



Demo Time

Pulumi: Takeaways

- Framework for defining and provisioning cloud infrastructure
- Powerful API in multiple languages
- Can still use GUI in emergencies
- Stateful representation
- Can be finicky when state breaks
- Documentation could be better

Pulumi Up

Free Virtual Conference

Tuesday May 6th, from 2pm

