

# Define your Azure Infrastructure as Code with Terraform



Jaap Brasser  @jaap\_brasser



*Those who don't automate are doomed to repeat themselves*



# PowerShell

Connector of the Hybrid Cloud

From **ANY** client

Manage **ANY** server

Running in **ANY** cloud\*

\*Or on-premises using **ANY** hypervisor

And **ANY** storage

**THOSE WHO DON'T  
AUTOMATE ARE DOOMED  
TO REPEAT THEMSELVES**



# Jaap Brasser

Tweets



jaap\_brasser

Codes



jaapbrasser

Works

Developer Advocate @ Rubrik

Does

Blogger, Speaker, Coder

Likes

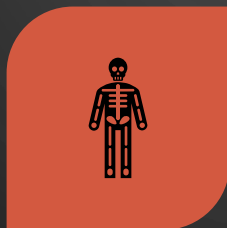
Cloud Automation & Security



# Agenda



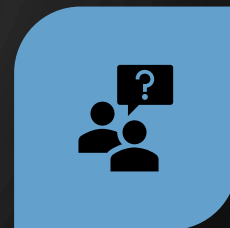
TERRAFORM



TERRAFORM  
INTERNALS



TERRAFORM  
ON AZURE



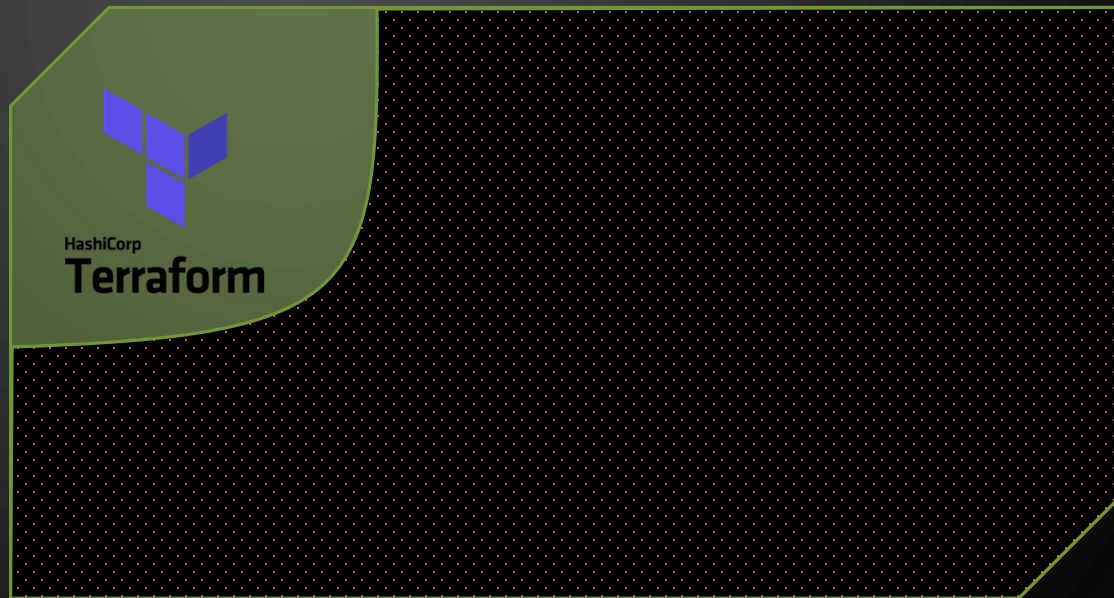
Q&A

# Introduction to Terraform

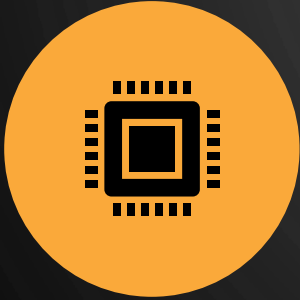
# Hashicorp



# Hashicorp







WHAT IS  
INFRASTRUCTURE AS  
CODE



WHAT IS TERRAFORM



WHY USE  
INFRASTRUCTURE AS  
CODE

# Terraform

[terraform.io](https://terraform.io)



- Multi-platform
- Written in Go
- Open source (CLI) or Enterprise (SaaS)
- JSON / HCL configuration files

## Declarative

- Terraform code is written in a declarative style, where you just define the **end state** needed for your infrastructure.

```
resource "ec2_instance" "example" {  
  count = 5  
  ami = "ami-afd15ed0"  
  instance_type = "t2.micro"  
}
```

# Use-cases of Terraform

## What problems does it solve

- Multi-Cloud deployments
- Common language for entire infrastructure
- Consistent deployments between clouds
- Exact duplication of infrastructure
- Self-Service (safe) provisioning
- Disposable environments – codify production

# Terraform internals

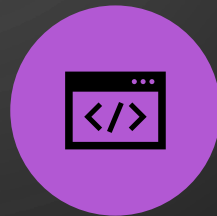
# Terraform Components



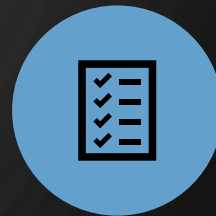
EXECUTABLE



FILES

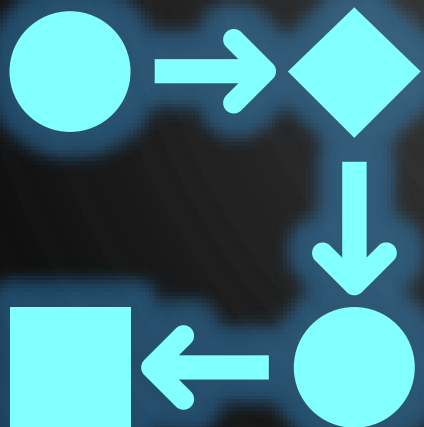


PLUGINS



STATE

# Terraform Workflow




terraform **init**  
terraform **validate**  
terraform **fmt**  
terraform **plan**  
terraform **apply**  
terraform **destroy**



# Providers

Responsible for understanding API interactions and exposing resources




## Terraform Providers


Provider Plugins for HashiCorp Terraform


San Francisco, CA <https://www.terraform.io> [hello@hashicorp.com](mailto:hello@hashicorp.com) Verified


**Repositories** 109 **People** 1 **Projects** 0


### Pinned repositories


 [terraform-provider-aws](#)  
Terraform AWS provider  
Go ★ 2.6k 🍴 2.3k

 [terraform-provider-google](#)  
Terraform Google Cloud Platform provider  
Go ★ 667 🍴 519

 [terraform-provider-azurerm](#)  
Terraform provider for Azure Resource Manager  
Go ★ 880 🍴 820

 [terraform-provider-vsphere](#)  
Terraform VMware vSphere provider  
Go ★ 207 🍴 161

 [terraform-provider-alicloud](#)  
Terraform AliCloud provider  
Go ★ 140 🍴 118

 [terraform-provider-kubernetes](#)  
Terraform Kubernetes provider  
Go ★ 428 🍴 296

# Azure Cloud Shell

# Requirements



Azure  
Subscription



Browser,  
Extension, App



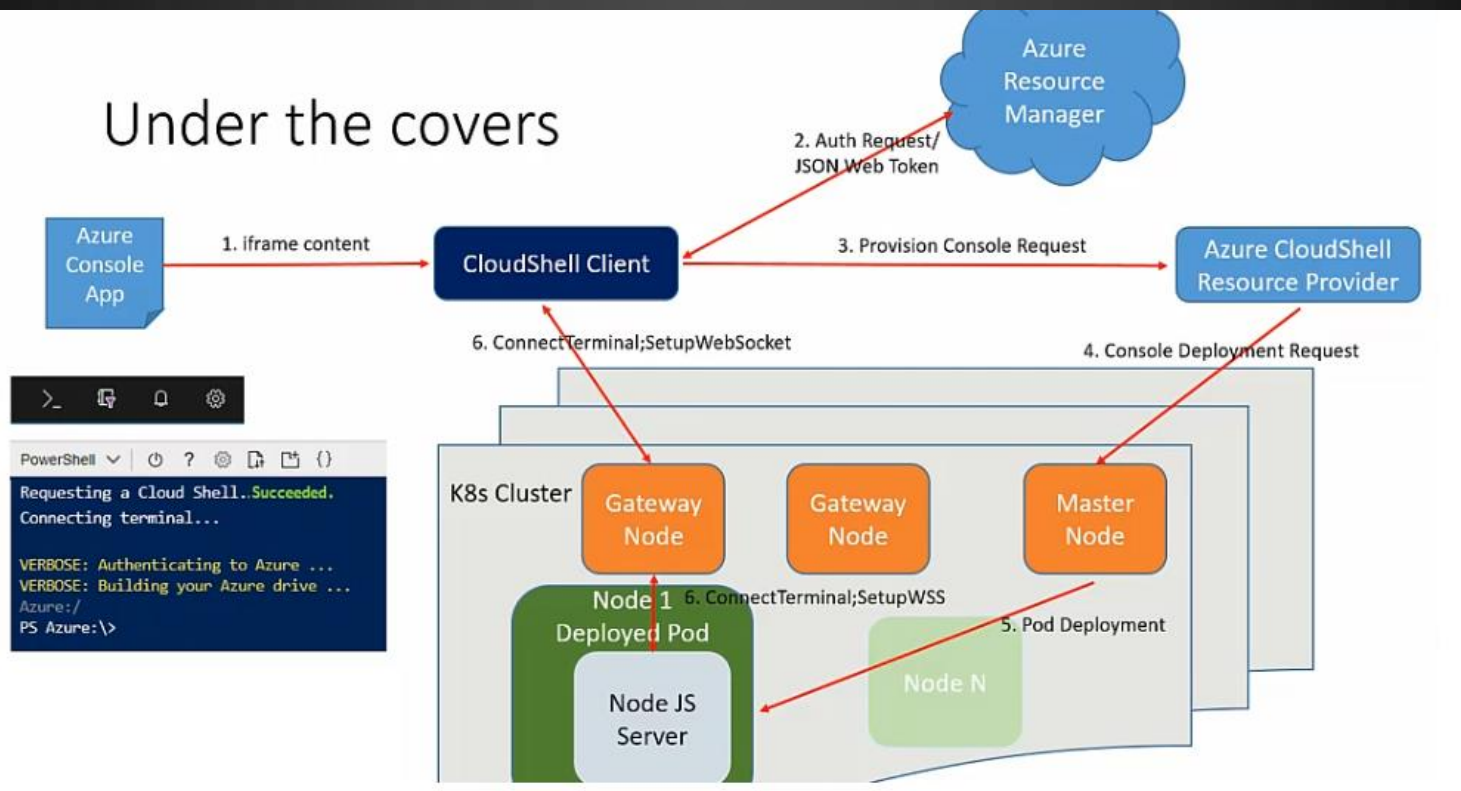
Storage  
Account



Shell skills

# Components of Cloud Shell

## Under the covers



## Language support

Language	Version
.NET Core	2.0.0
Go	1.9
Java	1.8
Node.js	8.9.4
PowerShell	6.2.0
Python	2.7 and 3.5 (default)


# Tools on Cloud Shell

<b>Linux tools</b>	bash
	zsh
	sh
	tmux
	dig
<b>Azure tools</b>	Azure CLI and Azure classic CLI
	AzCopy
	Service Fabric CLI
	Batch Shipyard
<b>Text editors</b>	blobxfer
	vim
	nano
	emacs
	code
<b>Source control</b>	git
<b>Build tools</b>	make
	maven
	npm
	pip

<b>Containers</b>	Docker Machine
	Kubectrl
	Helm
<b>Databases</b>	DC/OS CLI
	MySQL client
	PostgreSQL client
	sqlcmd Utility
<b>Other</b>	mssql-scripter
	iPython Client
	Cloud Foundry CLI
	Terraform
	Ansible
	Chef InSpec

# Secrets Management

tf

 Copy

```
provider "azurerm" {  
  subscription_id = "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxxx"  
  client_id       = "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxxx"  
  client_secret   = "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxxx"  
  tenant_id      = "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxxx"  
}
```

# Demo – Terraform on Azure







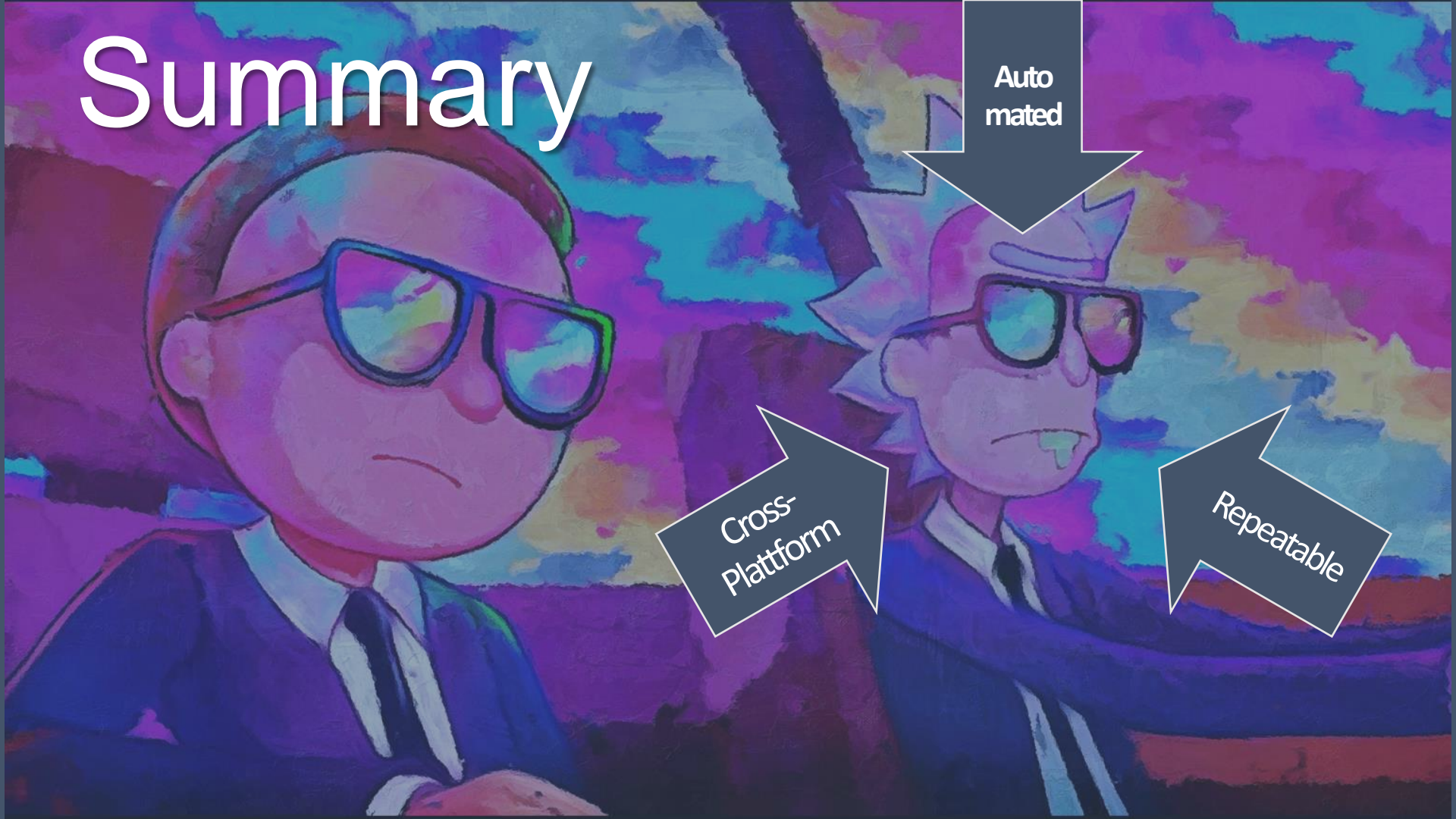
# Summary

# Summary

Auto  
mated

Cross-  
Platform

Repeatable



# QUESTIONS?