Pulumi

Pulumi
CloudNative Prague

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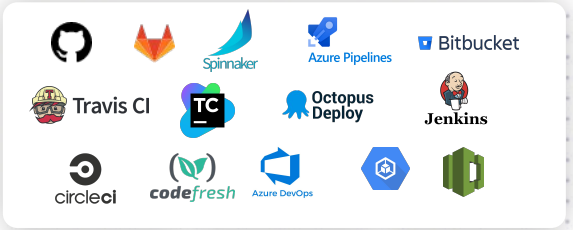
Customer Experience Architect

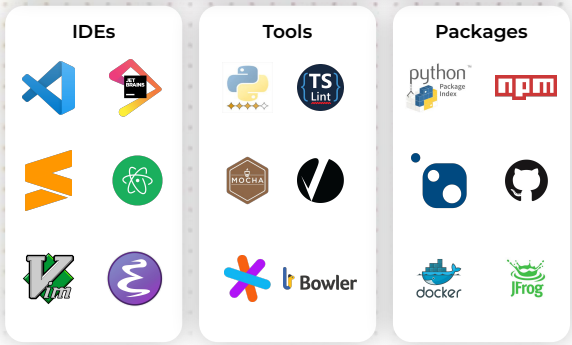
19 June 2023

Pulumi

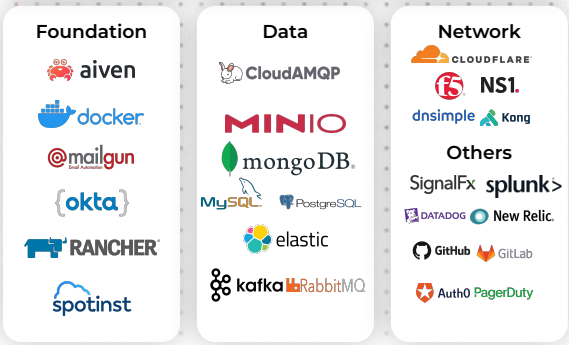
Introduction

Your Cloud,
Your Language, Your Way

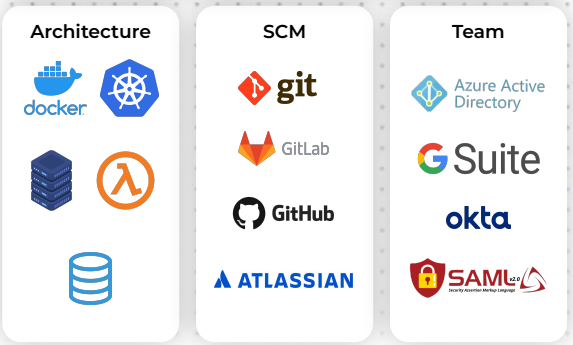




Build



Deploy



Manage

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Multi-Cloud Infrastructure as Code

BUILD, DEPLOY, AND MANAGE ANYWHERE WITH A STANDARD WORKFLOW

Core Features:

- Any Cloud, Any Language
- State Management
- Secrets Management
- Guaranteed Preview Plans
- CI/CD Integrations
- Webhooks
- REST API
- Automation API
- Dashboards and Reports

Clouds

aws
Azure
Google Cloud
kubernetes
HELM

Infra Providers

aiven
Akamai
Alibaba Cloud
Auth0
Azure Active Directory
CIVO
CloudAMQP
CLOUDFLARE
CONFLUENT
Consul
DATADOG
DigitalOcean
dnsimple
docker
EQUINIX METAL
fastly
GitHub
GitLab
HETZNER
kafka
KEYCLOAK
Kong
linode
@mailgun
MINIO
MySQL
mongoDB Atlas
New Relic
Nomad
NS1.
okta
openstack
Opsgenie
packet
PagerDuty
PostgreSQL
RabbitMQ
RANCHER
RKE
SignalFx
splunk>
snowflake
spot
sumo logic
HashiCorp Vault
VENAFI
vmware vSphere
WAVEFRONT

Cloud Native

NGINX
CoreDNS
Prometheus
Istio
JAEGER
fluentd
Grafana

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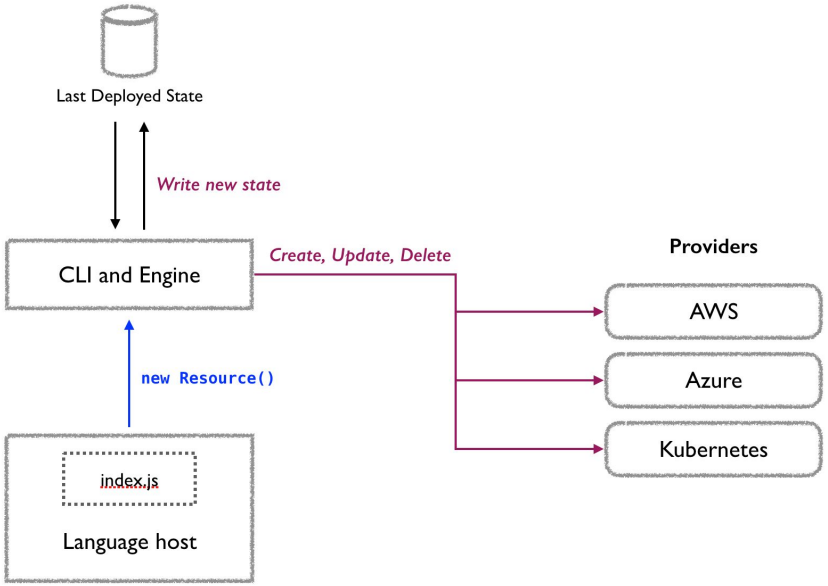
Pulumi - High Level View

- Pulumi Architecture
  - Language Host
  - CLI & Engine
  - Providers
  - State Backend
    - Pulumi Service
    - Cloud Storage (S3, ...)



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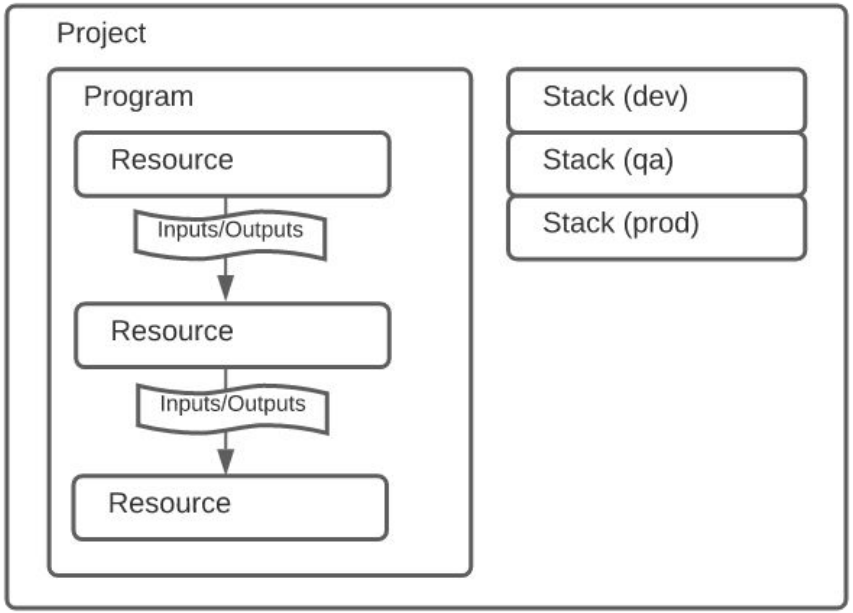
Pulumi - High Level View

- Automate your infrastructure setup with 1 or more Pulumi projects
- A project contains
  - a program: this is your “template” from which you can create stacks
  - the stacks: each stack is an “instance” of the program
- One project can use info from another project as input



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Demo: Simple Program

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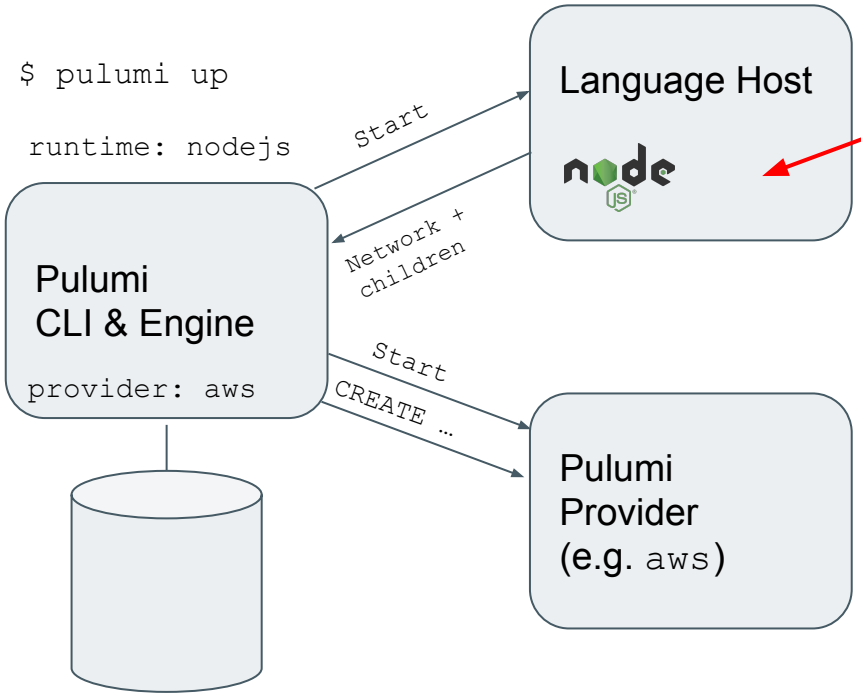
What about a real usecase?

Pulumi - ComponentResource




```typescript
export interface NetworkArgs {
    cidr: pulumi.Input<string>
};

export class Network extends pulumi.ComponentResource {

    private _vpc: aws.ec2.Vpc;
    private _subnet: aws.ec2.Subnet;
    private _securityGroup: aws.ec2.SecurityGroup;


    constructor(name: string, args: NetworkArgs, opts?: pulumi.ComponentResourceOptions) {
        super("org:network:Network", name, {}, opts);

        this._vpc = new aws.ec2.Vpc(name, {
            cidrBlock: args.cidr,
            tags: {
                Name: name
            }
        })

        this._subnet = new aws.ec2.Subnet(name, {
            cidrBlock: args.cidr,
            vpcId: this._vpc.id,
            tags: {
                Name: name
            }
        })
```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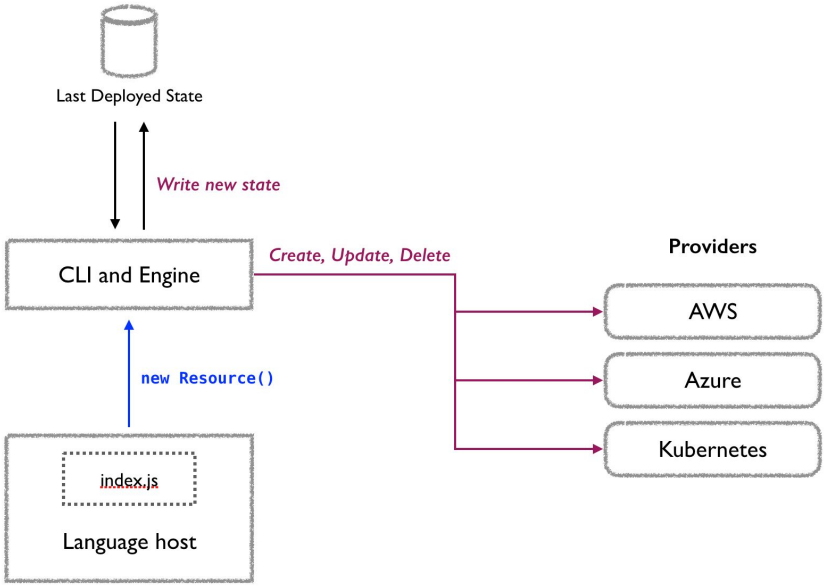
Pulumi - Multi Language Components



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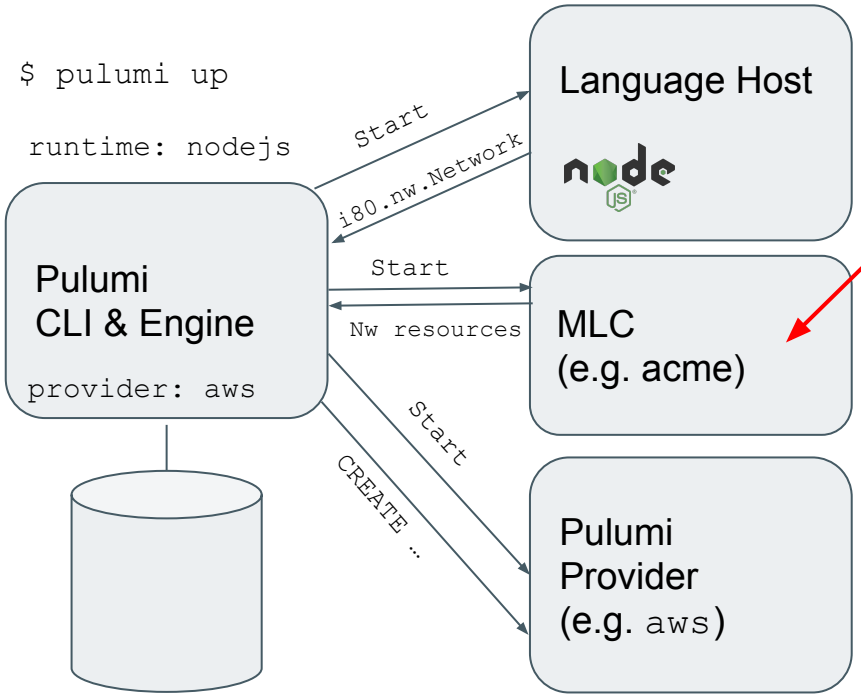
Pulumi - Multi Language Component




```typescript
export interface NetworkArgs {
    cidr: pulumi.Input<string>
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export class Network extends pulumi.ComponentResource {

    private _vpc: aws.ec2.Vpc;
    private _subnet: aws.ec2.Subnet;
    private _securityGroup: aws.ec2.SecurityGroup;


    constructor(name: string, args: NetworkArgs, opts?: pulumi.ComponentResourceOptions) {
        super("org:network:Network", name, {}, opts);

        this._vpc = new aws.ec2.Vpc(name, {
            cidrBlock: args.cidr,
            tags: {
                Name: name
            }
        })

        this._subnet = new aws.ec2.Subnet(name, {
            cidrBlock: args.cidr,
            vpcId: this._vpc.id,
            tags: {
                Name: name
            }
        })
```


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Demo: VPC + Cluster

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Policies:
Simple Program
+
Typescript Policies

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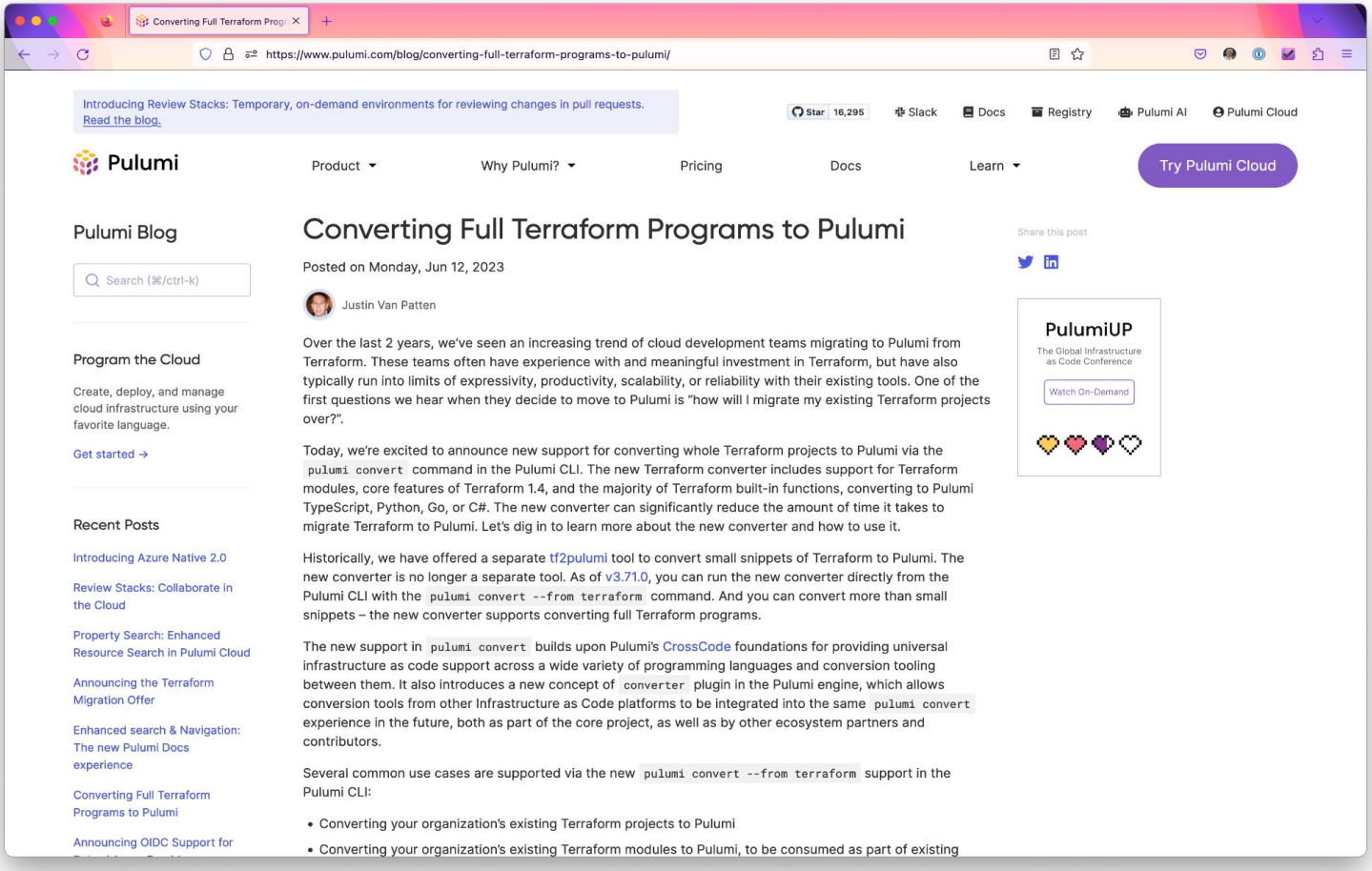
Policies: VPC/Cluster + Policies using OPA Rego



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Thank you!

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- https://www.pulumi.com/registry

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