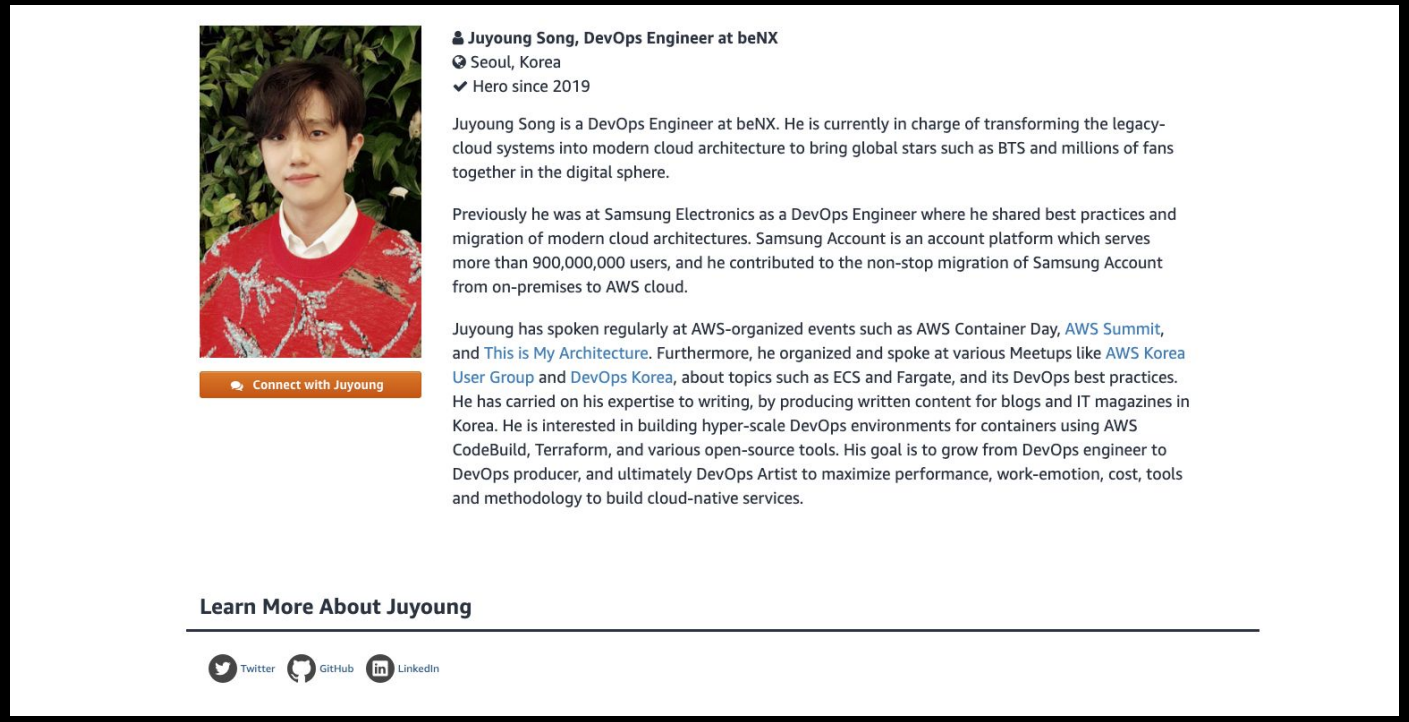
DevOps Art Project

Terraform and Goployer

AWS Hero

DevOps engineer at beNX & AWS Container hero



Connect with Juyoung

Juyoung Song, DevOps Engineer at beNX
Seoul, Korea
Hero since 2019

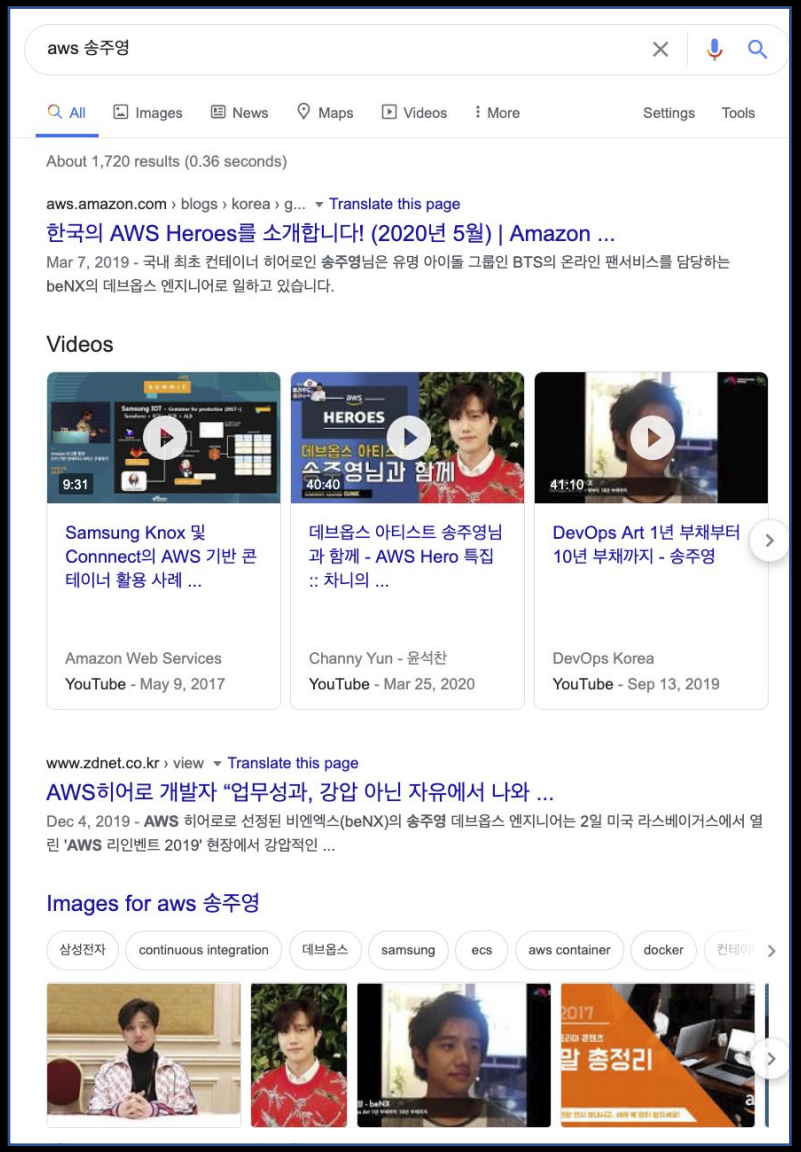
Juyoung Song is a DevOps Engineer at beNX. He is currently in charge of transforming the legacy-cloud systems into modern cloud architecture to bring global stars such as BTS and millions of fans together in the digital sphere.

Previously he was at Samsung Electronics as a DevOps Engineer where he shared best practices and migration of modern cloud architectures. Samsung Account is an account platform which serves more than 900,000,000 users, and he contributed to the non-stop migration of Samsung Account from on-premises to AWS cloud.

Juyoung has spoken regularly at AWS-organized events such as AWS Container Day, AWS Summit, and This is My Architecture. Furthermore, he organized and spoke at various Meetups like AWS Korea User Group and DevOps Korea, about topics such as ECS and Fargate, and its DevOps best practices. He has carried on his expertise to writing, by producing written content for blogs and IT magazines in Korea. He is interested in building hyper-scale DevOps environments for containers using AWS CodeBuild, Terraform, and various open-source tools. His goal is to grow from DevOps engineer to DevOps producer, and ultimately DevOps Artist to maximize performance, work-emotion, cost, tools and methodology to build cloud-native services.

Learn More About Juyoung

Twitter GitHub LinkedIn



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Personal Github: https://github.com/jupitersong
Project Github: https://github.com/DevopsArtFactory
Linked-in: https://www.linkedin.com/in/jupitersong\
AWS Hero: https://aws.amazon.com/developer/community/heroes/juyoung-song
e-mail: jupitersong47@gmail.com

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Introduction

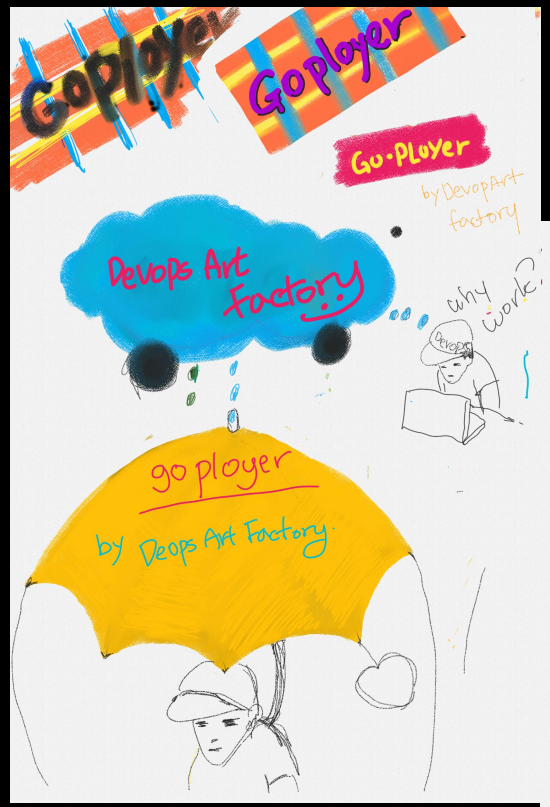
DevOps Art Project Terraform and Goployer

- DevOps Art Project
- Infrastructure as Code : Terraform
- Goployer

DevOps Art Project

What is DevOps Art Project ?

What is the project DevOps Art and purpose ?



Be Art from Tech

Concept Art

DevOps Art

DevOps 철학의 올바른 개념적 이해와
철학에 기반한 이상적인 구현을 위한
프로젝트

DevOps 의 목적인 업무 속도와 효율화를 위해 다양한 코드를 공유하고 오픈소스를 개발하고 있습니다.

- Sharing Infrastructure code for best practices
- Opensource with Terraform
- CLI for automation
- Deployment tool
- Online workshop

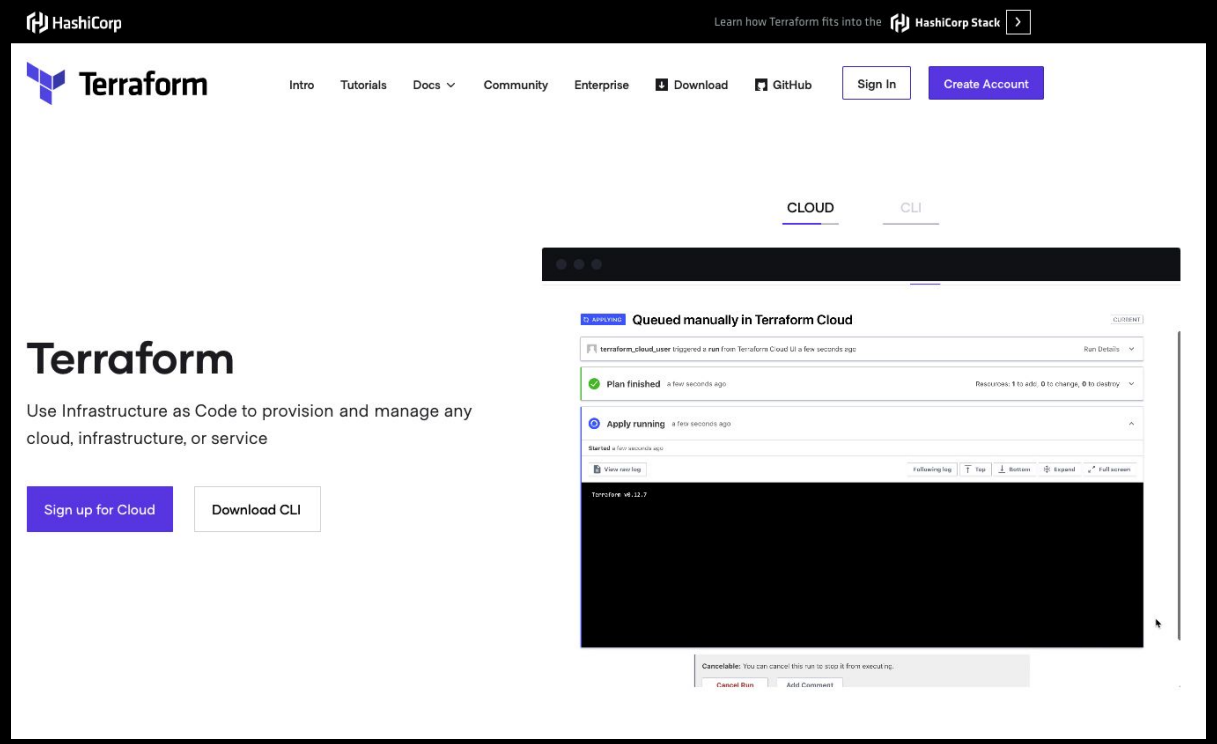
Github: https://github.com/DevopsArtFactory

Terraform

Infrastructure as Code

Infrastructure as Code

코드로써의 인프라



Terraform by Hashicorp

Terraform is a tool for building, changing, and versioning infrastructure safely and efficiently.

테라폼은 인프라를 만들고, 변경하고, 기록하는 IaC 를 위해 만들어진 도구로써, 문법이 쉬워 비교적 다루기 쉽고 사용자가 매우 많아 참고할 수 있는 예제가 많다.

IaC는 코드로써의 장점, 즉 작성용이성, 재사용성, 유지보수 등의 장점을 가진다.

즉 빠르게 구축과 변경이 가능하며 신뢰할 수 있는 시스템을 만들어내기 위한 기술.

Open Infrastructure Code

Opensource로써의 인프라 코드

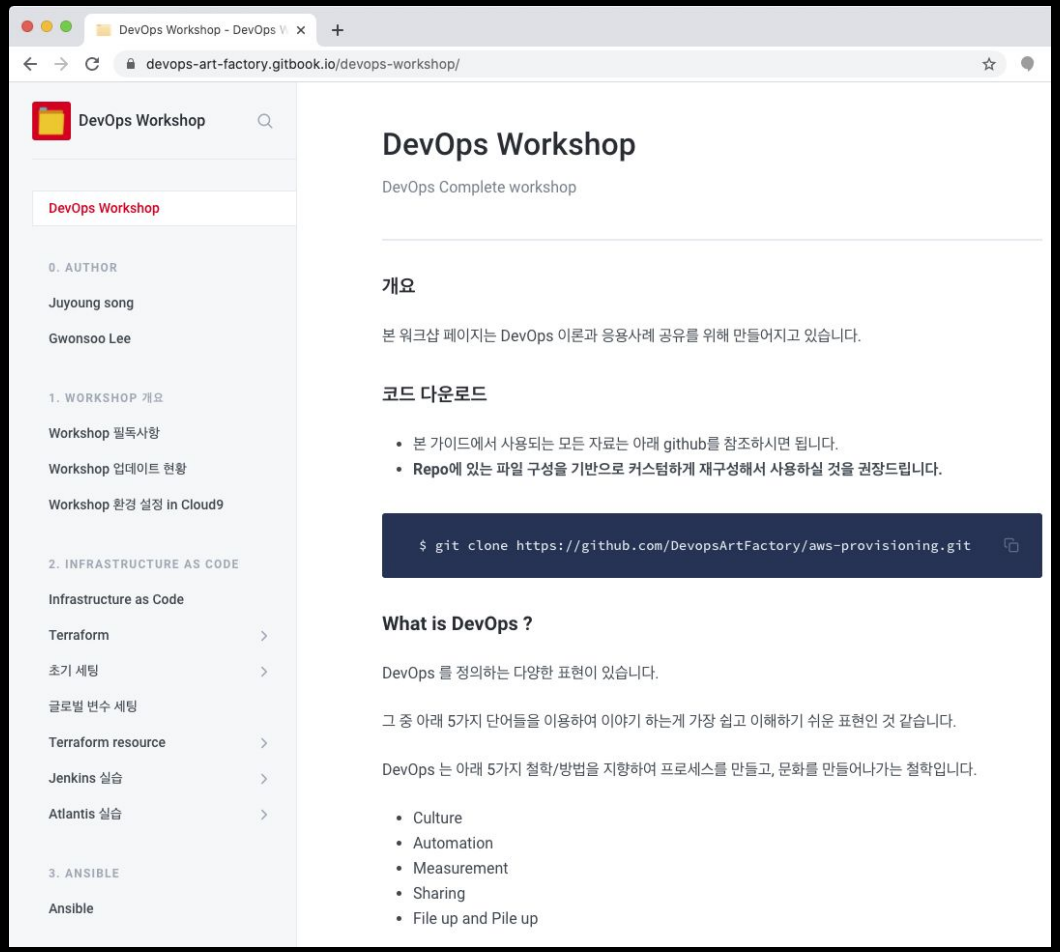
Opensource 로써의 Terraform, Infrastructure code

Past : Do you know Terraform and Packer ??

Current : Do you use Terraform and Packer well ??

DevOps art project : aws-provisioning

aws-provisioning project



Best practices for Terraform

- AWS
- variables
- symbolic link
- module
- workspace
- remote state
- convention

Workshop

- 이론 및 코드를 통한 실습

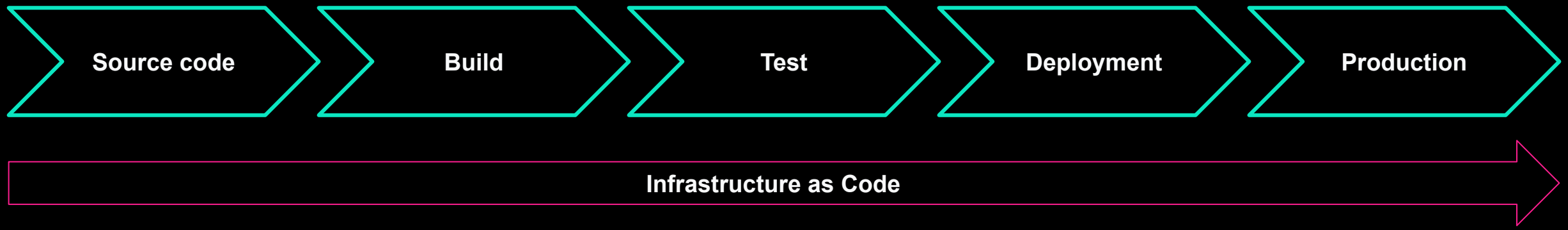
https://github.com/DevopsArtFactory/aws-provisioning

Goployer

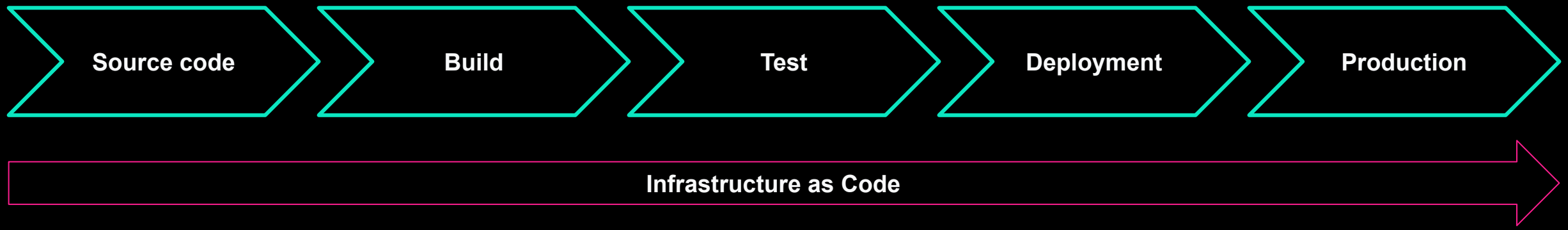
A fast, powerful, simple deployment tool

Infrastructure as Code : Area and Cycle

Infrastructure as Code : Area and Cycle



Infrastructure as Code : Area and Cycle



- Source Repo
- Library manager
- Security Inspect
- Measurement

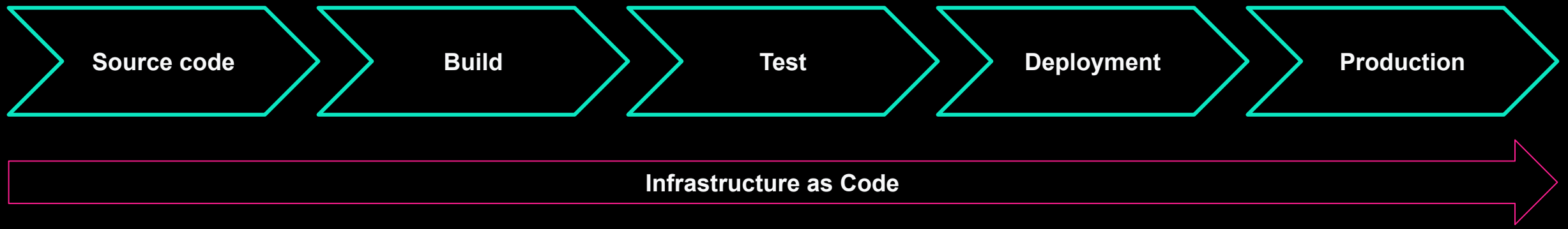
- C.I Tools
- Golden AMI
- Measurement

- Testing as code
- Synthetic automation
- Automate load test
- Measurement

- Deployment as code
- Immutable
- Measurement
- GitOps

- Monitoring as code
- Alerting as Code
- Chaos engineering
- Log management
- Analyzing
- Measurement

Infrastructure as Code : Area and Cycle



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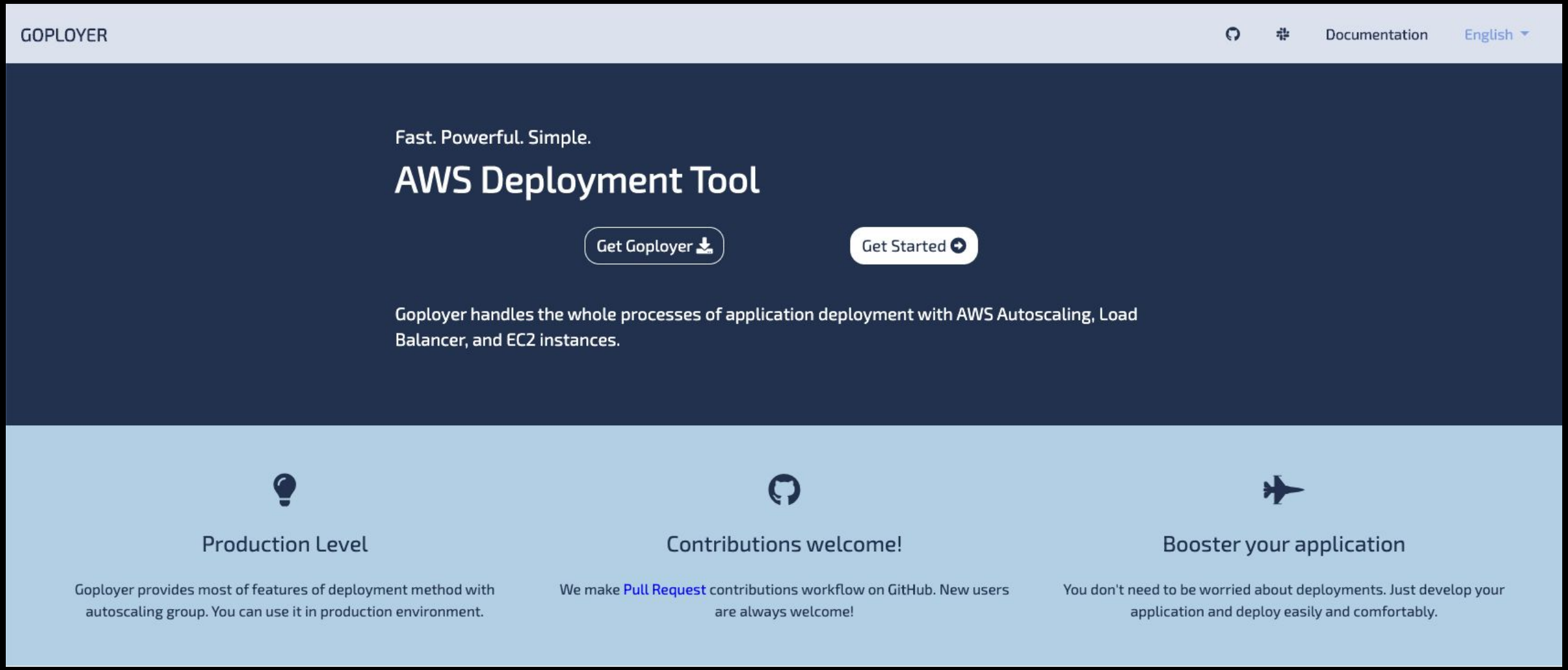
Opensource deployment tool Goployer: https://goployer.dev



Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

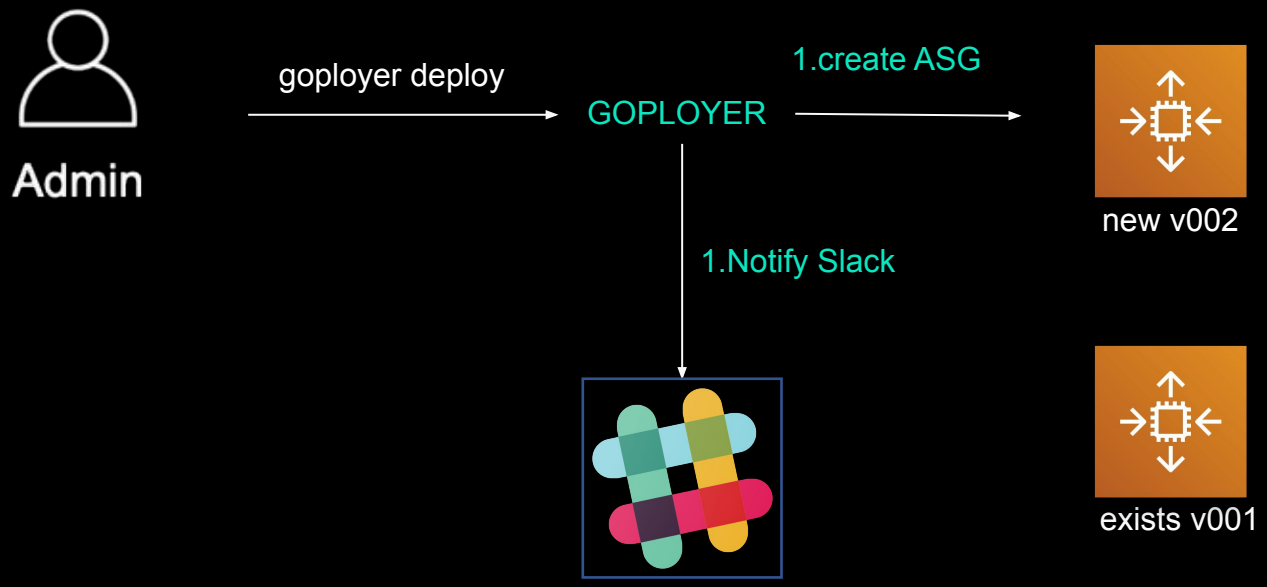
Simple

- Servers are never modified after they're deployed.
- If server has some problem, terminate it!
- If something needs to be updated, do deploy!
- Do troubleshooting !

  But do not change something in server
- Ensure each phase is the same
- Create and use golden AMI by Packer

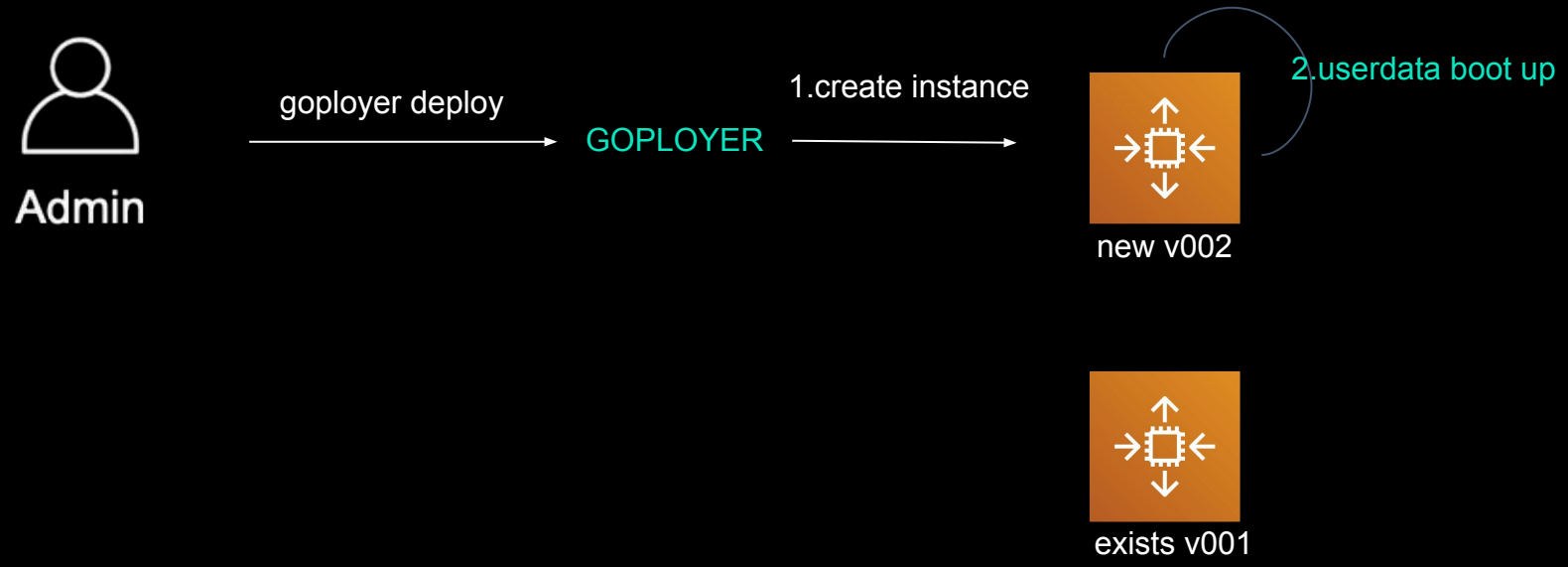
Immutable infrastructure

Best practices for deployment



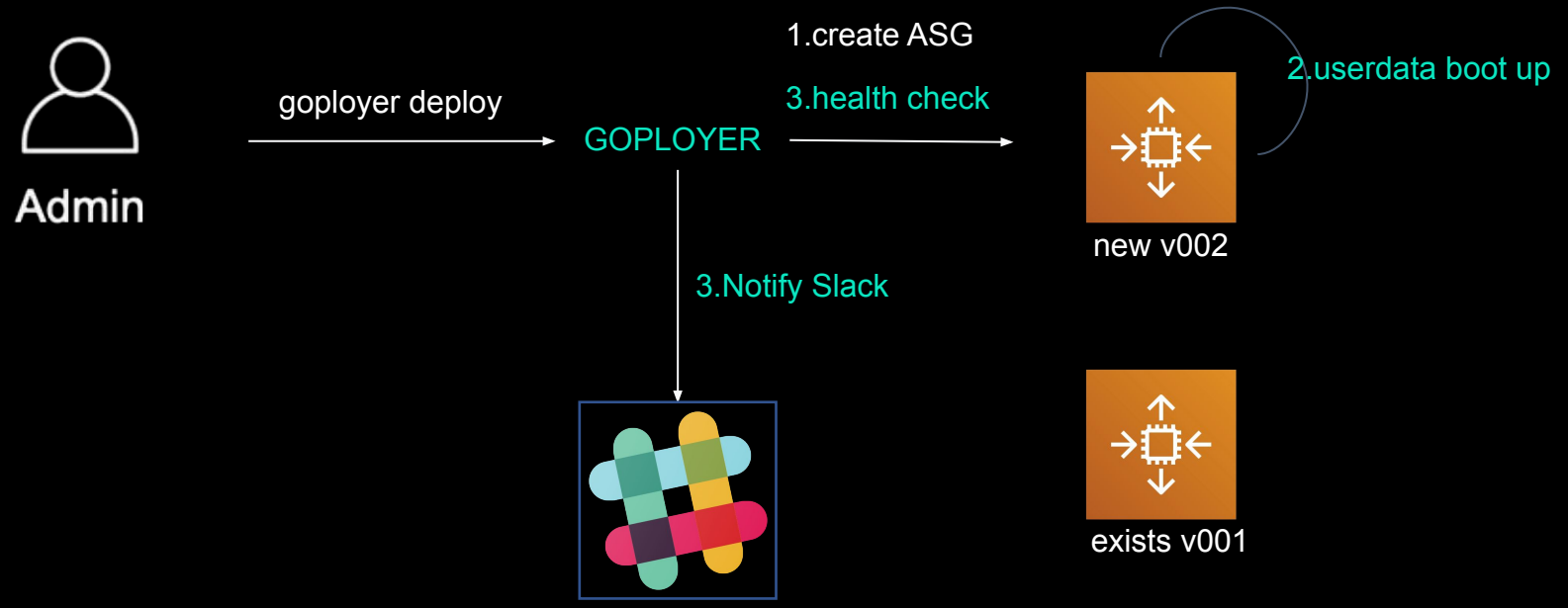
Immutable infrastructure

Best practices for deployment



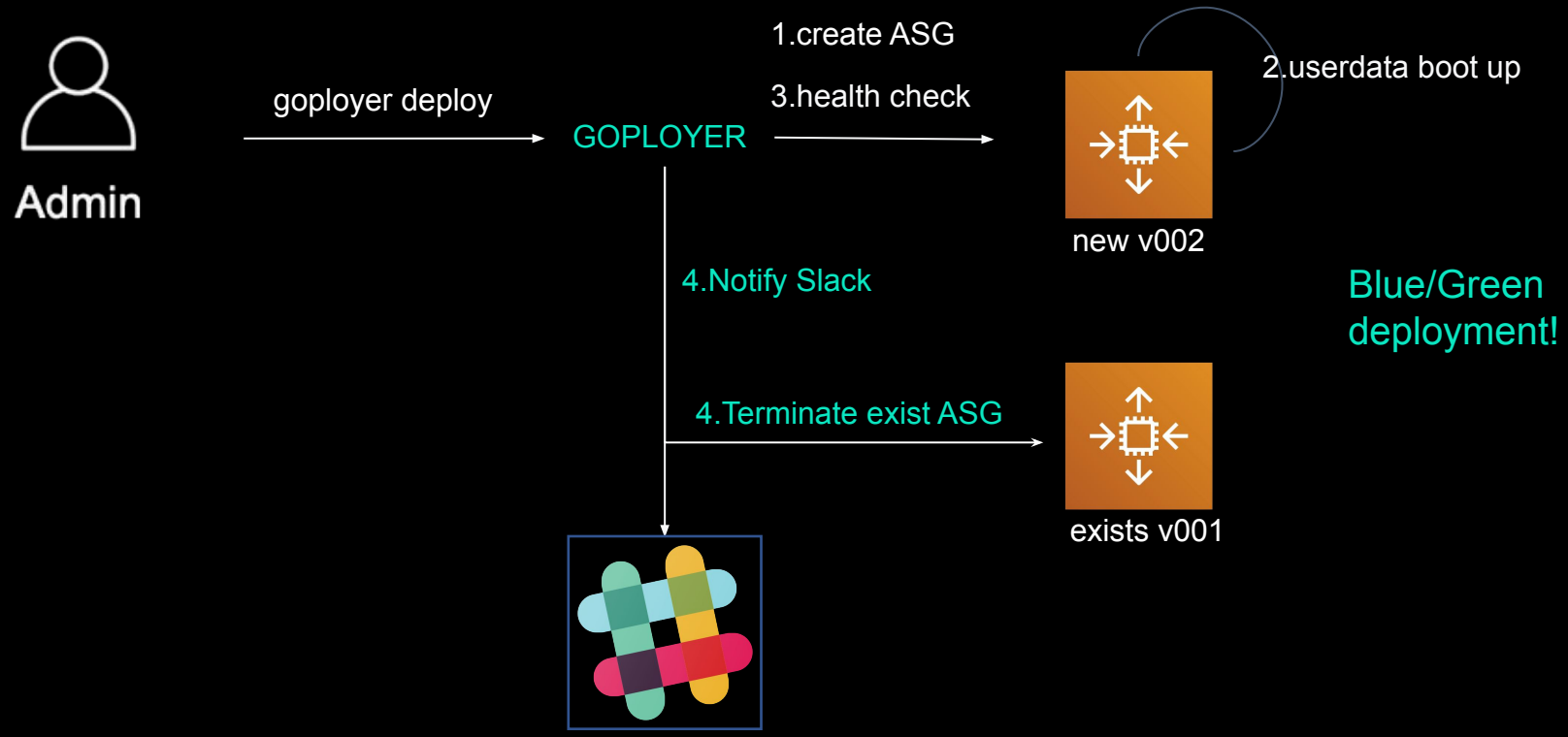
Immutable infrastructure

Best practices for deployment



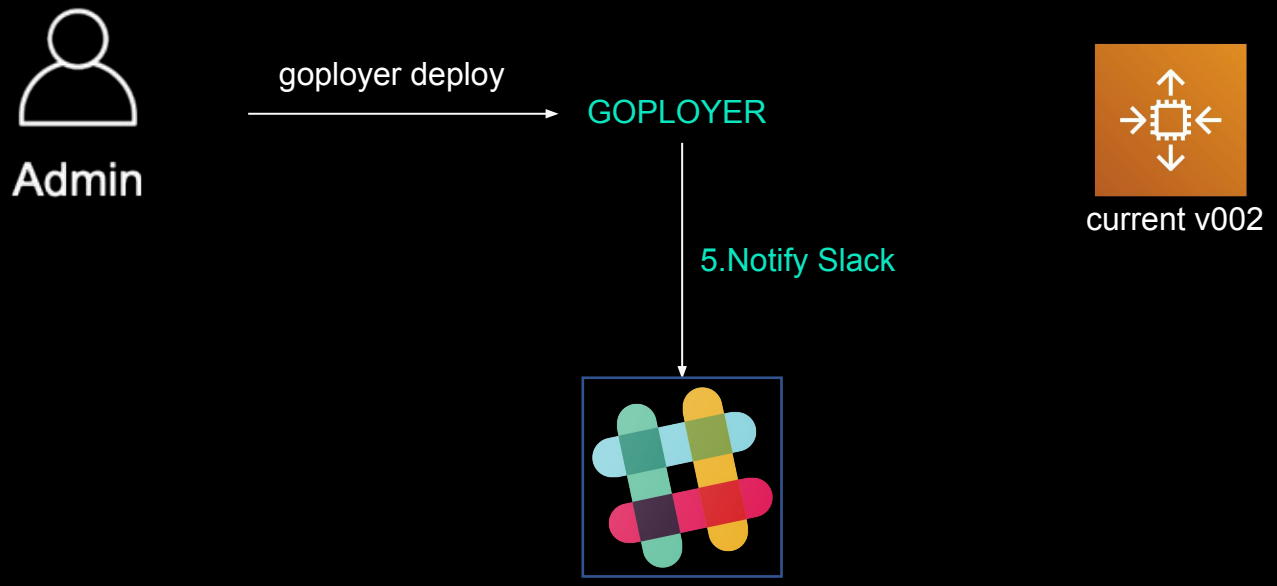
Immutable infrastructure

Best practices for deployment



Immutable infrastructure

Best practices for deployment



DevOps philosophy with Goployer

Best practices for deployment

Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

Simple

- service.yaml file

```yaml
tags:
  - project=test
  - repo=hello-deploy

stacks:
  - stack: artd
    polling_interval: 30s
    account: dev
    env: dev
    replacement_type: BlueGreen
    iam_instance_profile: app-hello-profile
    ebs_optimized: true
    block_devices:
      - device_name: /dev/xvda
        volume_size: 15
        volume_type: "gp2"
      - device_name: /dev/xvdb
        volume_type: "st1"
        volume_size: 500
    capacity:
      min: 1
      max: 2
      desired: 1
    autoscaling: *autoscaling_policy
    alarms: *autoscaling_alarms
    lifecycle_callbacks:
      pre_terminate_past_cluster:
        - service hello stop

    regions:
      - region: ap-northeast-2
        instance_type: t3.medium
        ssh_key: test-master-key
        ami_id: ami-01288945bd24ed49a
        use_public_subnets: true
        vpc: vpc-artd_apnortheast2
        detailed_monitoring_enabled: false
        security_groups:
          - hello-artd_apnortheast2
          - default-artd_apnortheast2
        healthcheck_target_group: hello-artdapne2-ext
        availability_zones:
          - ap-northeast-2a
          - ap-northeast-2b
          - ap-northeast-2c
        target_groups:
          - hello-artdapne2-ext
```

Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

Simple

- If move it, measure it
- Get insight from everything
- metrics.yaml
- Dynamodb
  - Metrics for deployment : info, date
  - Metrics for server : uptime,
  - Stats : RequestCount,

DevOps philosophy with Goployer

Best practices for deployment

identifie	deployment_statu	config	release-notes
hello-v	terminated	{"manifest":"deployments/hello.yml","manifest_s3_region":"","ami":"ami-0c8916…	By goployer
hello-v	deployed	{"manifest":"deployments/hello.yml","manifest_s3_region":"","ami":"ami-0c8916…	By goployer
hello-v	terminated	{"manifest":"deployments/hello.yml","manifest_s3_region":"","ami":"ami-0c8916…	By goployer

terminated_date	statistics_record_time	start_date	deployed_date	uptime_hour	uptime_minute	uptime_second	stat
2020-08-26T07:46:12Z	2020-08-26T07:46:13Z	2020-08-24T07:44:44Z	2020-08-24T07:47:17Z	47.982126	2878.927542	172735.652523	{ "targetgroup/
2020-08-24T07:49:51Z	2020-08-24T07:49:52Z	2020-08-20T07:12:47Z	2020-08-20T07:15:20Z	96.575374	5794.522468	347671.348101	{ "targetgroup/
2020-08-20T07:18:25Z	2020-08-20T07:18:26Z	2020-08-19T14:17:32Z	2020-08-19T14:20:06Z	16.972187	1018.331204	61099.872269	{ "targetgroup/
2020-08-14T01:57:24Z	2020-08-14T01:57:24Z	2020-08-14T00:45:02Z	2020-08-14T00:47:36Z	1.163491	69.809457	4188.567437	{ "targetgroup/

```
2020-08-07T10:00:00Z Number : 206330.3375
2020-08-07T11:00:00Z Number : 108170.0625
2020-08-07T12:00:00Z Number : 395182.6625
2020-08-07T13:00:00Z Number : 266578.0125
2020-08-07T14:00:00Z Number : 144047.7625
```

```
2020-08-25T00:00:00Z Number : 26108.0375
2020-08-25T01:00:00Z Number : 25123.55
2020-08-25T02:00:00Z Number : 25553.325
2020-08-25T03:00:00Z Number : 36676.825
2020-08-25T04:00:00Z Number : 32434.390554
2020-08-25T05:00:00Z Number : 46389.233862
total Number : 1027216.305707
```

Cost effective

Don’t waste money, Save money

Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

Simple

- Easy to use ASG
- Easy to predict
- Support spot instance
- Support scheduled instance

EC2 Pricing Model Score

(normalized RI hours + normalized Savings Plans hours + normalized Spot hours)

/ (total normalized EC2 hours)

Cost effective

Don’t waste money, Save money

Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

Simple

- Easy to use ASG
- Easy to predict
- Support spot instance
- Support scheduled instance

EC2 Pricing Model Score is 96%

(normalized RI hours + normalized Savings Plans hours + normalized Spot hours)

/ (total normalized EC2 hours)

DevOps philosophy with Goployer

Best practices for deployment

Best practices

Immutable Infrastructure

Deployment as Code

Measurement

Cost effective

Simple

- Developed by golang (No install)
- Simple commands
- Various powerful commands

```
goployer deploy --manifest=manifests/hello.yaml --stack=yourstack --region=ap-northeast-2
```

Goployer DEMO

Fast, Powerful, Simple deployment tool

DevOps Art project

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Be Artist From Technician