APRESENTAÇÃO
DE APOIO

DEVOPS AVANÇADO

Cássio Trindade – Aula 02

PUCRS online uol edtech

Professores

CÁSSIO TRINDADE

Professor Convidado

Profissional da área de TI, trabalhando há mais de uma década com a formação de profissionais, dando aulas no Instituto Federal do Rio Grande do Sul, na Faculdade Dom Bosco, Universidade Luterana do Brasil (ULBRA), Pontifícia Universidade Católica do RS (PUCRS) e na TargetTrust. Atualmente atuando como Arquiteto de Software na PUCRS, sendo responsável pela condução e elaboração de mais de 90 projetos diretamente com alunos do curso de Engenharia de Software, trabalhando com as mais variadas tecnologias. Mais de 30 anos de experiência nas áreas de desenvolvimento de software, aplicativos para celuares e sistemas corporativos e para internet desde projetos de e-commerce para o Sonae Portugal e site de classificados digitais do Grupo RBS a dezenas de aplicativos mobiles.

MARCELO VEIGA NEVES

Professor PUCRS

Possui doutorado em Ciência da Computação pela Pontifícia Universidade Católica do Rio Grande do Sul (2015), mestrado em Ciência da Computação na Universidade Federal do Rio Grande do Sul (2009) e graduação em Ciência da Computação pela Universidade Federal de Santa Maria (2005). Tem experiência na área de Ciência da Computação, atuando principalmente nos seguintes temas: redes de computadores, processamento de alto desempenho e sistemas embarcados.

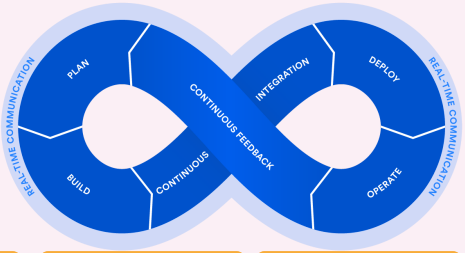
Ementa da disciplina

Estudo sobre entrega contínua (CD), uso de contêineres, orquestração e monitoramento. Experimentação de ferramentas: GitHub Actions, Docker Compose e Kubernets e ferramentas de monitoração.

DEVOPS AVANÇADO

Cássio A. W. Trindade

AGENDA



01

Introdução
Planejamento
Build / Construção

02

CI/CD
Continuous Integration
Continuous Delivery

03

Deploy
Operate / Operação

04

Continuous Feedback

Fonte: https://br.atlassian.com/devops

CI / CD - Conceitos

CONTAINERS

ORCHESTRATION

ECS
Elastic Container
Service

EKS
Elastic Container
Kubernets

SERVERLESS

Fargate

CI / CD - Conceitos

CONTAINERS

ECS
Elastic Container Service

CI / CD - Conceitos

EKS
Elastic Container
Kubernets

Orquestração de contêineres prontos para produção

Kubernetes (K8s) é um produto Open Source utilizado para automatizar a implantação, o dimensionamento e o gerenciamento de aplicativos em contêiner. Ele agrupa contêineres que compõem uma aplicação em unidades lógicas para facilitar o gerenciamento e a descoberta de serviço. O Kubernetes se baseia em 15 anos de experiência na execução de containers em produção no Google, combinado com as melhores ideias e práticas da comunidade.

Kubernetes

ORCHESTRATION

Serviço gerenciado do Kubernetes – Amazon EKS

O Amazon Elastic Kubernetes Service (EKS) é um serviço gerenciado e certificado em conformidade com o Kubernetes para executar o Kubernetes na AWS e on-premises.

Amazon Web Services

CI / CD - Conceitos

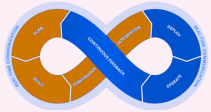
SERVERLESS

O que é serverless?

Serverless é um modelo de desenvolvimento nativo em nuvem para criação e execução de aplicações sem o gerenciamento de servidores.

redhat.com

CI / CD - Conceitos



LIMPAR TUDO

CodePipeline

Service /Task

ECR

Target Groups

CodeBuild

Cluster

Load Balancer

IAM

ECS

Fargate

CodePipeline

- Identificação no fluxo de cada faze (stage).
- Source: CodeCommit, GitHub, Amazon S3, etc.
- Build: CodeBuild, Jenkins
- Test:
- Deploy: AWS CodeDeploy, beanStalk, CloudFormation, ECS, etc..
- Stages (estágio):
  - Pode ter ações executadas de forma serial ou paralela
  - Exemplos de Stages: Build / Test / Deploy / Load Test...
  - Aprovação do stage pode ser habilitada para ser realizada manualmente.

CodePipeline

- Troubleshooting.
- Qualquer alteração no CodePipeline Stage podem gerar eventos CloudWatc, que pode criar
  - Notificações SNS: Falhas no pipeline, Stages cancelados, etc.
  - Console AWS
- AWS CloudTrail pode ser usado para auditar AWS API Calls
- IAM Service Role define permições de autorização do pipeline.

CodePipeline - Exemplo CI

CodeCommit

Codigos fontes

CodePipeline

Stages pipeline

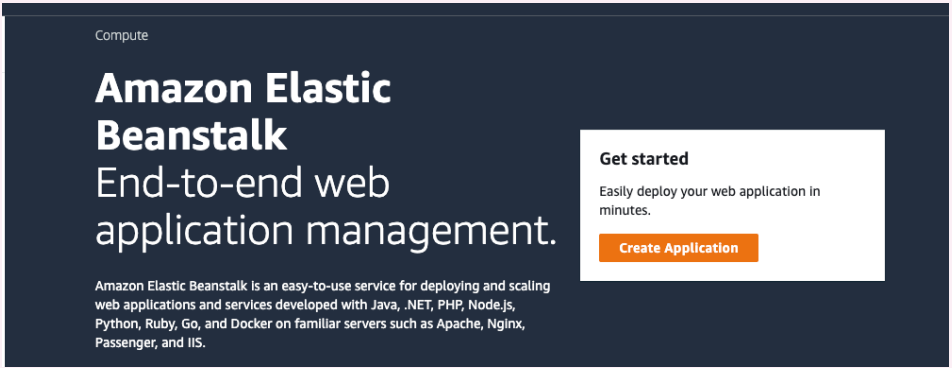
S3

Atefatos

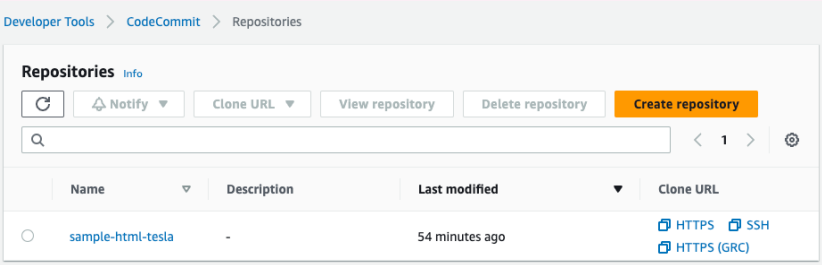
ElasticBeanstalk

Ambiente gerenciado pela AWS

CodePipeline - Exemplo CI

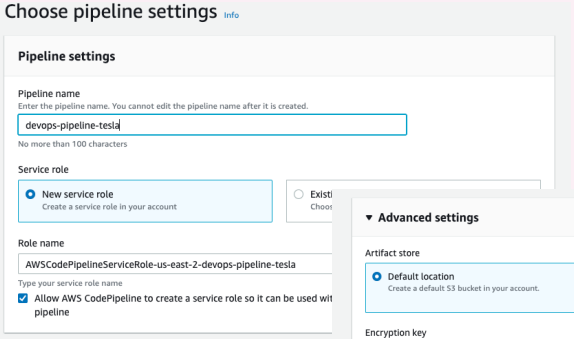


CodePipeline - Exemplo CI



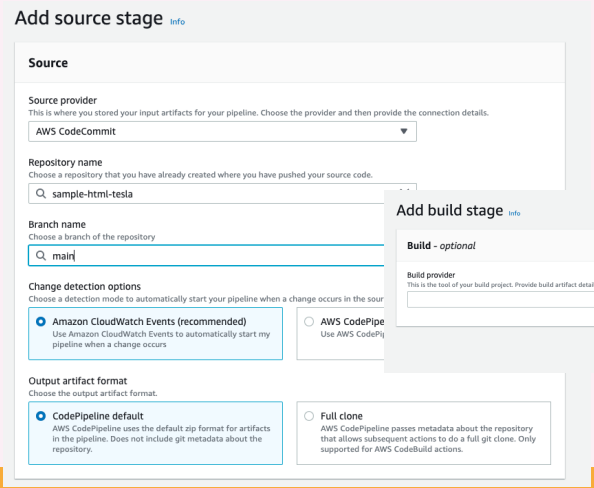
CodePipeline - Exemplo CI

CodePipeline

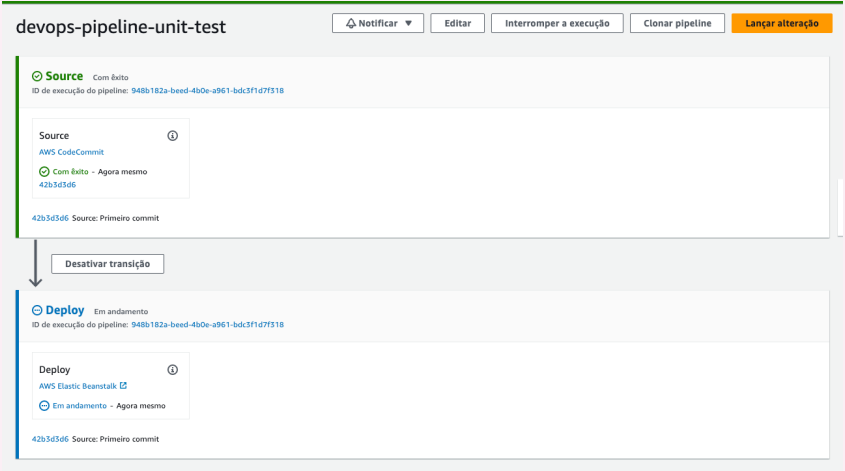


CodePipeline - Exemplo CI

CodePipeline



CodePipeline - Exemplo CI



CloudFormation

CloudFormation - Exemplo Deploy

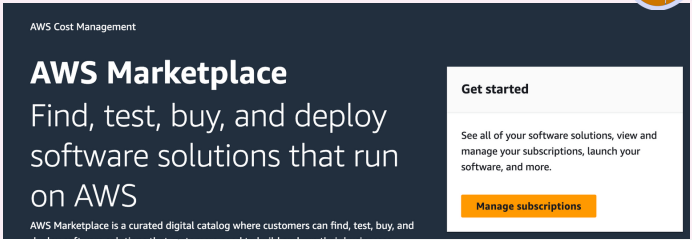
Codigos fontes em: https://github.com/cassiowt/cloudformation-demo.git

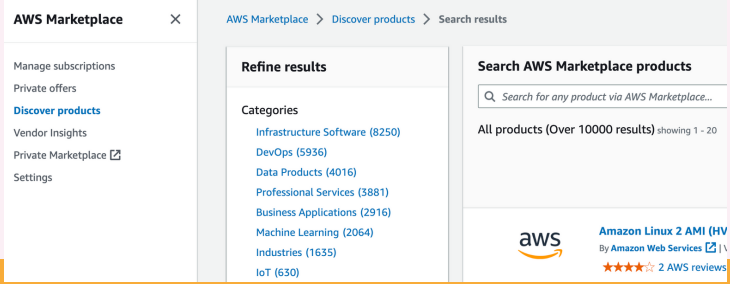
Instalar Jenkis a partir do AWS Marketplace

Construir uma instância S3 usando o Jenkins

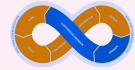
CloudFormation - Exemplo Deploy

Install / Config



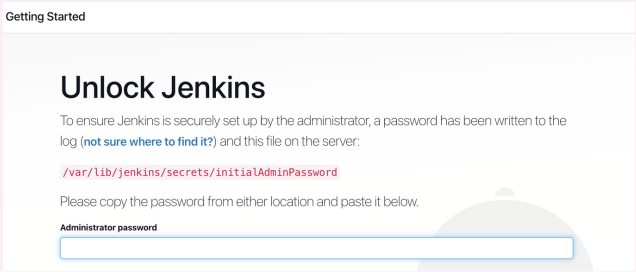


CloudFormation - Exemplo CI



Jenkins

Install / Config



Jenkins by Cloudeya

By: Cloudeya Limited Latest Version: 0.0.1-r06 on Ubuntu 22.04

A secure Jenkins engineered and updated regularly by Cloudeya. Jenkins is an open source Continuous Integration and Continuous Delivery (CI/CD) server designed to automate the

Show more

Linux/Unix

Free Tier

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Save to List

Typical Total Price

$0.042/hr

Total pricing per instance for services hosted on t3.medium in US East (N. Virginia). View Details

Overview | Pricing | Usage | Support | Reviews

CloudFormation - Exemplo CI

Install / Config

Instance: i-0a8c869f2875cd32b (Jenkins_Devops)

sg-0eeeba17a0b422af9 (sgJenkinsDevop)

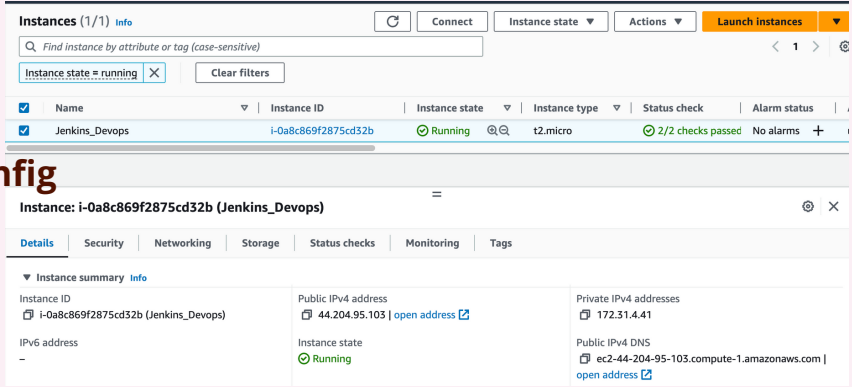
▼ Inbound rules

Filter rules

Name	Security group rule ID	Port range	Protocol	Source	Security groups
–	sgr-0215144fc85fe51f7	80	TCP	0.0.0.0/0	sgJenkinsDevop
–	sgr-0b43de8ad8568f24f	443	TCP	0.0.0.0/0	sgJenkinsDevop
–	sgr-00cc652a9aedfe71a	22	TCP	0.0.0.0/0	sgJenkinsDevop
–	sgr-0f2e5ecb675f5ce1f	8080	TCP	0.0.0.0/0	sgJenkinsDevop

CloudFormation - Exemplo CI

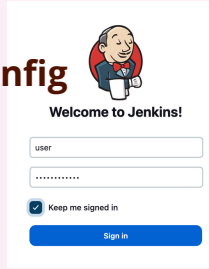
Install / Config

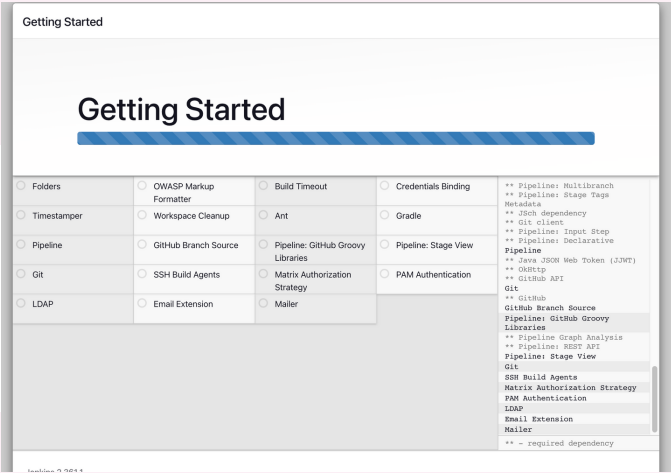


CloudFormation - Exemplo CI

Jenkins

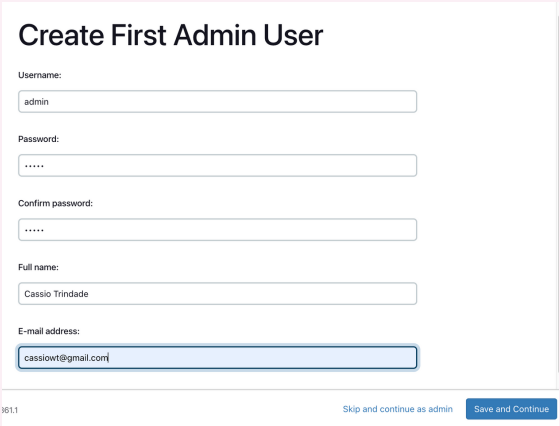
Install / Config





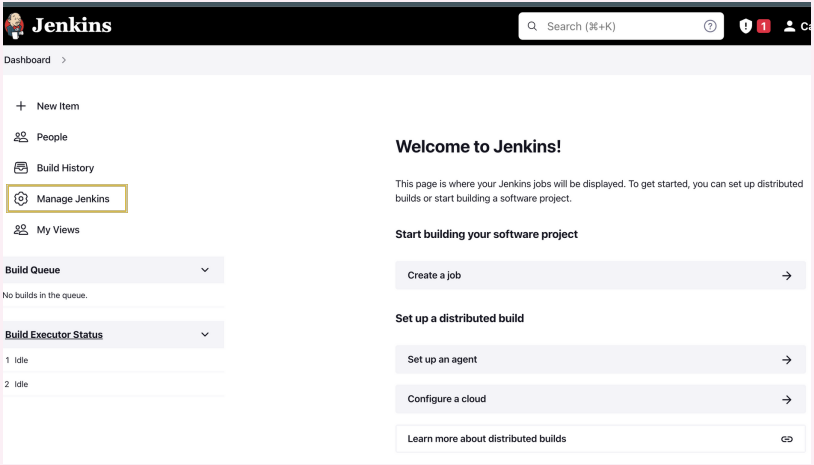
CloudFormation - Exemplo CI

Install / Config



CloudFormation - Exemplo CI

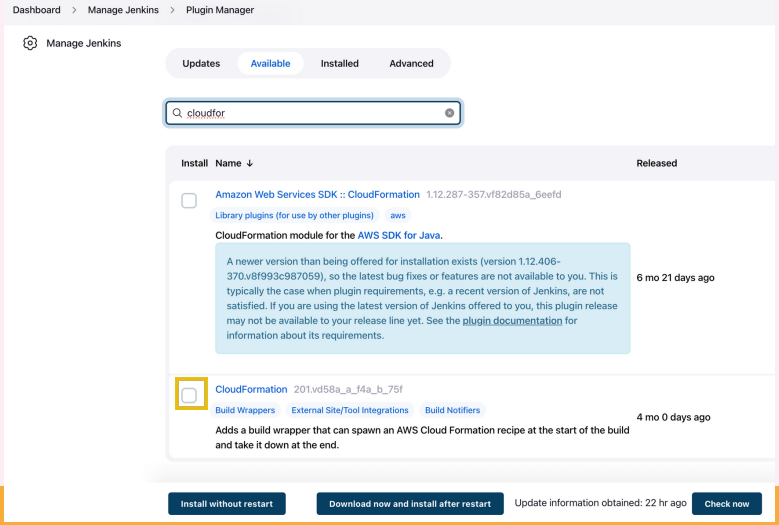
Install / Config



CloudFormation - Exemplo CI

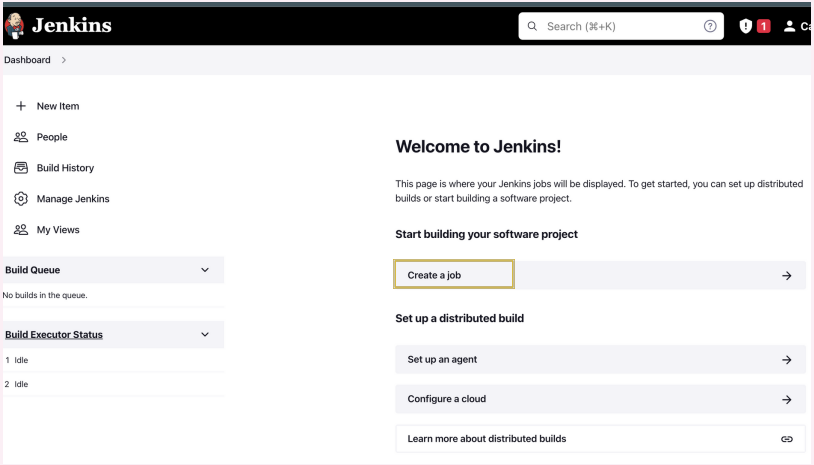
Jenkins

Install / Config



CloudFormation - Exemplo CI

Install / Config

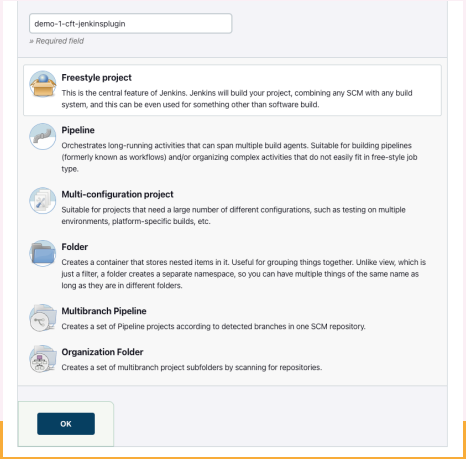


CloudFormation - Exemplo CI

Jenkins

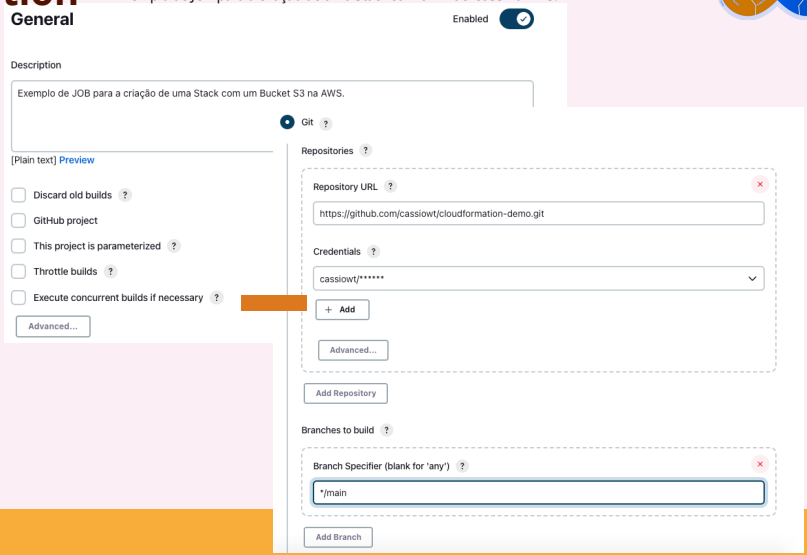
Create JOB

Nome demo-1-cft-jenkinsplugin



CloudFormation - Exemplo de JOB para a criação de uma Stack com um Bucket S3 na AWS.

Jenkins
Create JOB



CloudFormation - Exemplo CI

Jenkins

Create JOB

Build Environment

- [ ] Delete workspace before build starts
- [ ] Use secret text(s) or file(s)
- [ ] Add timestamps to the Console Output
- [ ] Create AWS Cloud Formation stack
- [ ] Inspect build log for published build scans
- [ ] Terminate a build if it's stuck
- [ ] With Ant

Stack configuration

AWS Region

US East (Northern Virginia) Region

Cloud Formation recipe file/S3 URL. (.json)

demo1cft.json

Stack name

Jenkins-Bucket-S3

Stack description

Modelo do AWS CloudFormation criando um Bucket S3.

Cloud Formation parameters

Timeout (seconds)

AWS Access Key

AKIAXD3PNORLF5BB52MH

AWS IAM

Criar usuario JenkinsDevops na AWS
Credenciais
Chave devops

CloudFormation - Exemplo CI

Jenkins

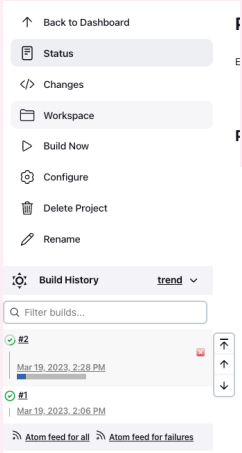
Create JOB

```
{
    "AWSTemplateFormatVersion": "2010-09-09",
    "Resources": {
        "S3Bucket": {
            "Type": "AWS::S3::Bucket"
        }
    },
    "Outputs": {
        "BucketName": {
            "Value": {
                "Ref": "JenkinsCFT_S3Bucket"
            },
            "Description": "Nome do bucket Amazon S3 para Exemplo de cft."
        }
    }
}
```

CloudFormation - Exemplo CI

Jenkins

Create JOB




```
Creating Cloud Formation stack: Jenkins-Bucket-S3
Stack status CREATE_IN_PROGRESS. ( 0ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 267ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 445ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 844ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 1649ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 3259ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 6474ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 12867ms since previous check)
Stack status CREATE_COMPLETE. ( 25678ms since previous check)
48070e30-c662-11ed-8469-129fd1501ad7 - AWS::CloudFormation::Stack - CREATE_IN_PROGRESS - User Initiated
S3Bucket-CREATE_IN_PROGRESS-2023-03-19T14:28:17.107Z - AWS::S3::Bucket - CREATE_IN_PROGRESS - null
S3Bucket-CREATE_IN_PROGRESS-2023-03-19T14:28:17.669Z - AWS::S3::Bucket - CREATE_IN_PROGRESS - Resource
creation Initiated
S3Bucket-CREATE_COMPLETE-2023-03-19T14:28:38.233Z - AWS::S3::Bucket - CREATE_COMPLETE - null
57a43f70-c662-11ed-a179-12e4d34e5b87 - AWS::CloudFormation::Stack - CREATE_COMPLETE - null
Successfully created stack: Jenkins-Bucket-S3
Finished: SUCCESS
```

CloudFormation - Exemplo CI

Jenkins
Create JOB

Amazon S3 > Buckets

Account snapshot
Storage lens provides visibility into storage usage and activity trends. Learn more

View Storage Lens dashboard

Buckets (1) Info
Buckets are containers for data stored in S3. Learn more

Copy ARN | Empty | Delete | Create bucket

Find buckets by name

Name	AWS Region	Access	Creation date
jenkins-bucket-s3-s3bucket-wks3ei74jx2l	US East (N. Virginia) us-east-1	Objects can be public	March 19, 2023, 11:28:18 (UTC-03:00)

CloudFormation > Stacks

Stacks (3)

Delete | Update | Stack actions | Create stack

Filter by stack name | Active | View nested

Stack name	Status	Created time	Description
Jenkins-Bucket-S3	CREATE_COMPLETE	2023-03-19 11:28:13 UTC-0300	-

CloudFormation - Exemplo CI

Stack Usando Jenkins que cria uma Instancia EC2 com PHM e MySql

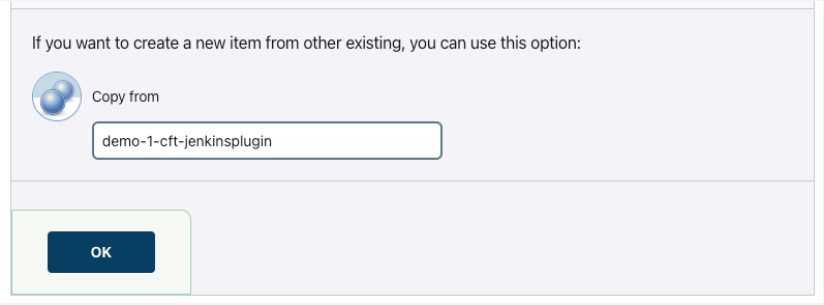
Codigos fontes em: https://github.com/cassiowt/cloudformation-demo.git

Criar novo JOB

Construir uma instância EC2

CloudFormation - Exemplo CI

Jenkins
Create JOB



CloudFormation - Exemplo CI

Jenkins
Create JOB

Cloud Formation recipe file/S3 URL. (.json)

demo2cft.json

Stack name ?

Jenkins-PHP-MySql

Stack description

Modelo do AWS CloudFormation criando PHP com MySql

Cloud Formation parameters ?

CloudFormation - Exemplo CI

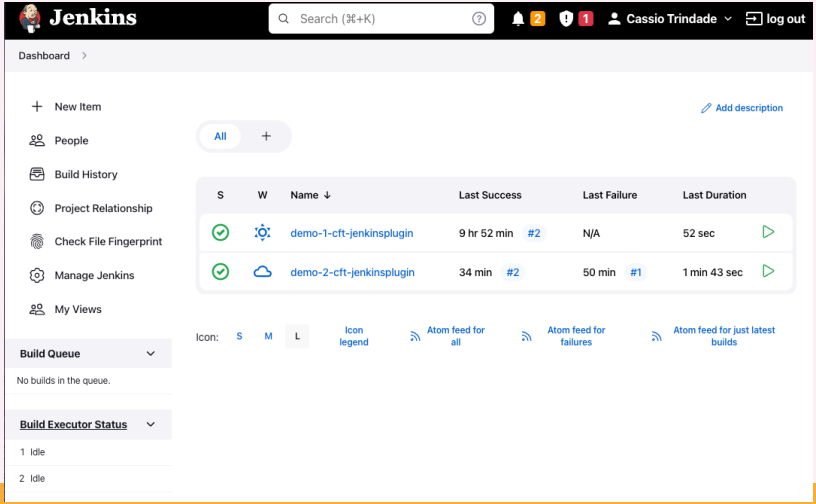
Jenkins

Create JOB

```
AWSTemplateFormatVersion: "2010-09-09"
Description: "Modelo de amostra do AWS CloudFo...
{ 7 } Parameters
  { 3 } KeyName
  { 7 } DBName
  { 7 } DBUser
  { 7 } DBPassword
  { 7 } DBRootPassword
  { 5 } InstanceType
  { 7 } SSHLocation
{ 3 } Mappings
  { 53 } AWSInstanceType2Arch
  { 53 } AWSInstanceType2NATArch
  { 19 } AWSRegionArch2AMI
{ 2 } Resources
  { 4 } WebServerInstance
    Type: "AWS::EC2::Instance"
    { 1 } Metadata
    { 5 } Properties
    { 1 } CreationPolicy
      { 1 } ResourceSignal
  { 2 } WebServerSecurityGroup
    Type: "AWS::EC2::SecurityGroup"
    { 2 } Properties
{ 1 } Outputs
  { 2 } WebsiteURL
```

CloudFormation - Exemplo CI

Jenkins
Create JOB



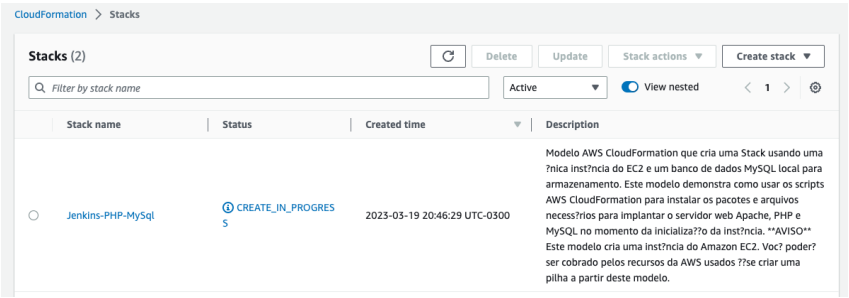
CloudFormation - Exemplo CI

Jenkins
Create JOB

```
Creating Cloud Formation stack: Jenkins-PHP-MySql
Stack status CREATE_IN_PROGRESS. ( 0ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 248ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 442ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 846ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 1644ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 3239ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 6439ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 12863ms since previous check)
Stack status CREATE_IN_PROGRESS. ( 25659ms since previous check)
Stack status CREATE_COMPLETE. ( 51263ms since previous check)
44fe65a0-c6b0-11ed-9e0f-0e0ebb4e6c77 - AWS::CloudFormation::Stack - CREATE_IN_PROGRESS - User Initiated
WebServerSecurityGroup-CREATE_IN_PROGRESS-2023-03-19T23:46:34.124Z - AWS::EC2::SecurityGroup -
CREATE_IN_PROGRESS - null
WebServerSecurityGroup-CREATE_IN_PROGRESS-2023-03-19T23:46:39.031Z - AWS::EC2::SecurityGroup -
CREATE_IN_PROGRESS - Resource creation Initiated
WebServerSecurityGroup-CREATE_COMPLETE-2023-03-19T23:46:39.712Z - AWS::EC2::SecurityGroup - CREATE_COMPLETE
- null
WebServerInstance-CREATE_IN_PROGRESS-2023-03-19T23:46:41.639Z - AWS::EC2::Instance - CREATE_IN_PROGRESS -
null
WebServerInstance-CREATE_IN_PROGRESS-2023-03-19T23:46:43.511Z - AWS::EC2::Instance - CREATE_IN_PROGRESS -
Resource creation Initiated
WebServerInstance-15ed39db-6933-48e2-9c7e-217c539789b3 - AWS::EC2::Instance - CREATE_IN_PROGRESS - Received
SUCCESS signal with UniqueId i-0af513fb7b139d673
WebServerInstance-CREATE_COMPLETE-2023-03-19T23:47:56.252Z - AWS::EC2::Instance - CREATE_COMPLETE - null
79f5d090-c6b0-11ed-8ea5-0a8d1540dabd - AWS::CloudFormation::Stack - CREATE_COMPLETE - null
Successfully created stack: Jenkins-PHP-MySql
Finished: SUCCESS
```

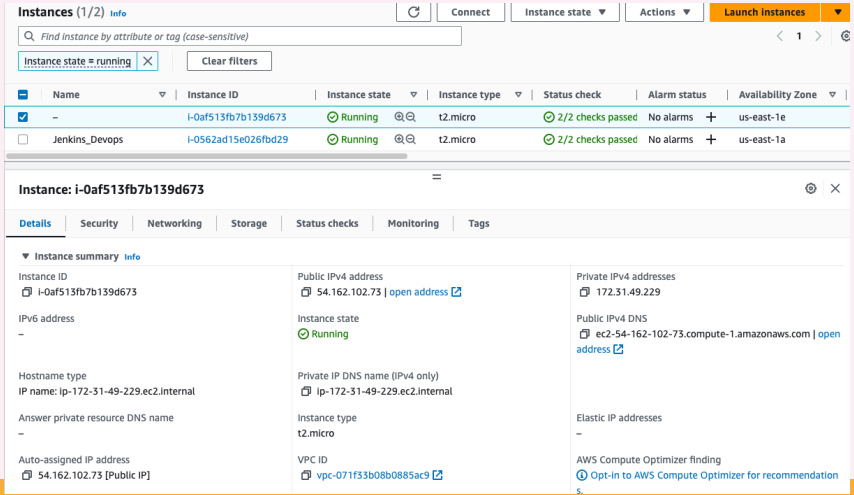
CloudFormation - Exemplo CI

Jenkins
Create JOB



CloudFormation - Exemplo CI

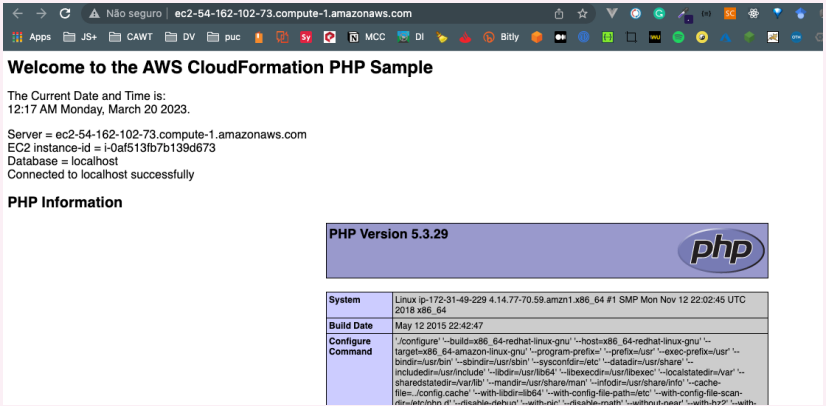
Jenkins
Create JOB



CloudFormation - Exemplo CI

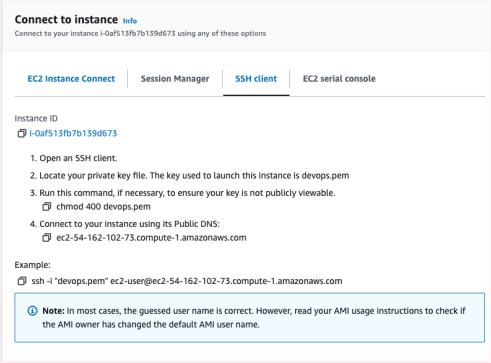
Jenkins

Create JOB



CloudFormation - Exemplo CI

Jenkins
Create JOB



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CloudFormation - Exemplo CI

CloudFormation - Exemplo CI

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