AWS re:Invent

DOP402-R1

Deep dive into AWS Cloud Development Kit

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AWS re:Invent

aws

Infrastructure *is* code

AWS re:Invent

https://bit.ly/31l55Xy

December 2018

AWS ONLINE TECH TALKS

https://bit.ly/2VKNXt4

August 2019

#cdkdemos

Deep dive agenda

- AWS Cloud Development Kit (AWS CDK) concepts
- Demo scenario
- Let's code (in two acts)
- Wrap-up

AWS CDK concepts

AWS Cloud Development Kit

Software development framework for defining cloud infrastructure using familiar programming languages

```
class UrlShortener extends Stack {
  constructor(scope: App, id: string, props?: UrlShortenerProps) {
    super(scope, id, props);

    const vpc = new ec2.Vpc(this, 'vpc', { maxAzs: 2 });
    const cluster = new ecs.Cluster(this, 'cluster', { vpc: vpc });
    const service = new patterns.NetworkLoadBalancedFargateService(this, 'sample-app', {
      cluster,
      taskImageOptions: {
        image: ecs.ContainerImage.fromAsset('ping'),
      },
      dom
    });
    // Setup AutoScaling policy
    const scaling = service.service.autoScaleTas
    scaling.scaleOnCpuUtilization('CpuScaling',
      targetUtilizationPercent: 50,
      scaleInCooldown: Duration.seconds(60),
      scaleOutCooldown: Duration.seconds(60)
    });
  }
}
```

domainName
domainZone

(property) patterns.NetworkLoadBalancedServiceBaseProps.domainName?: string | undefined

The domain name for the service, e.g. "api.example.com."

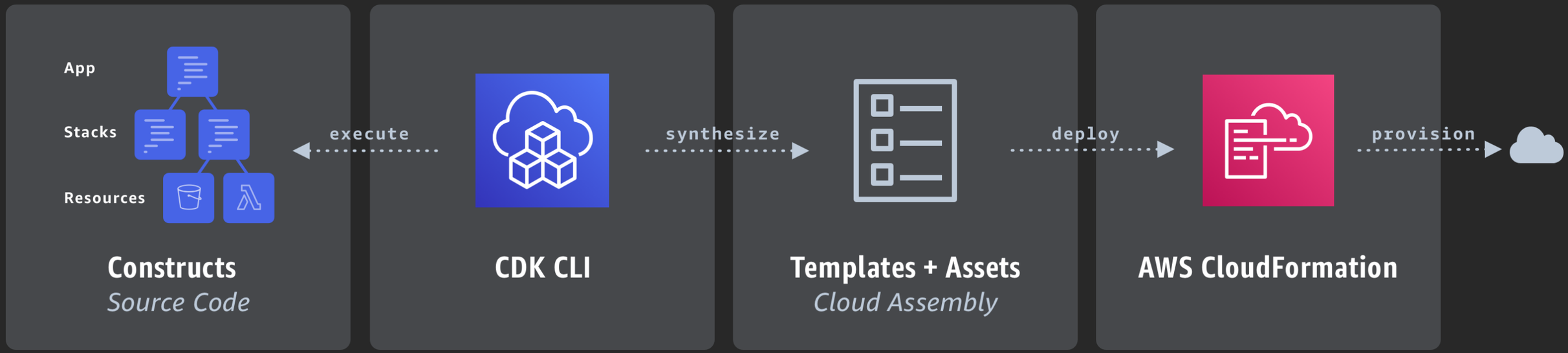
@default

- No domain name.

AWS CDK

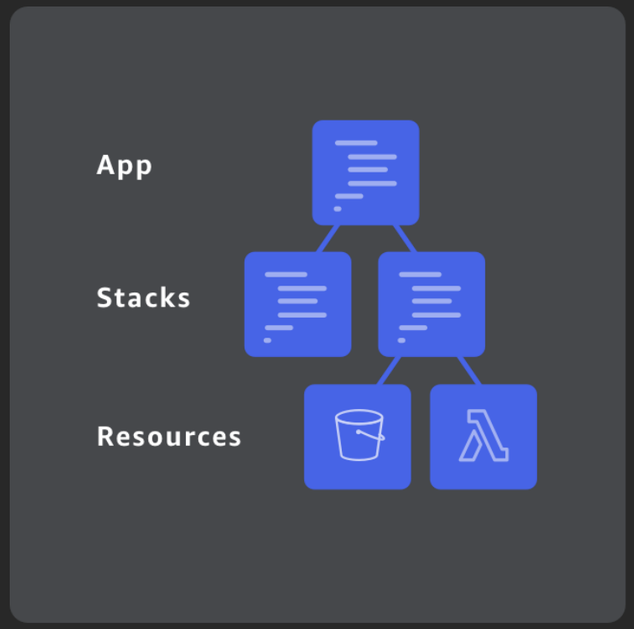
From constructs to the cloud

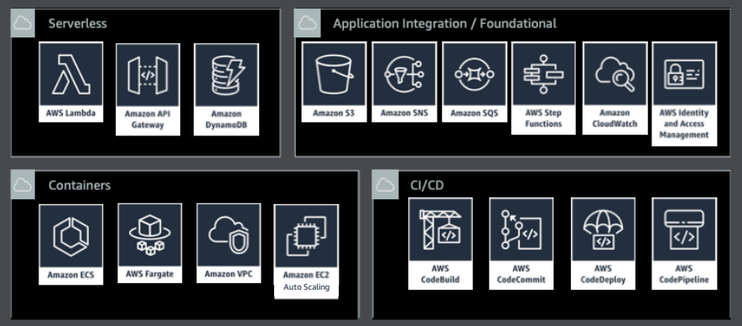
AWS CDK

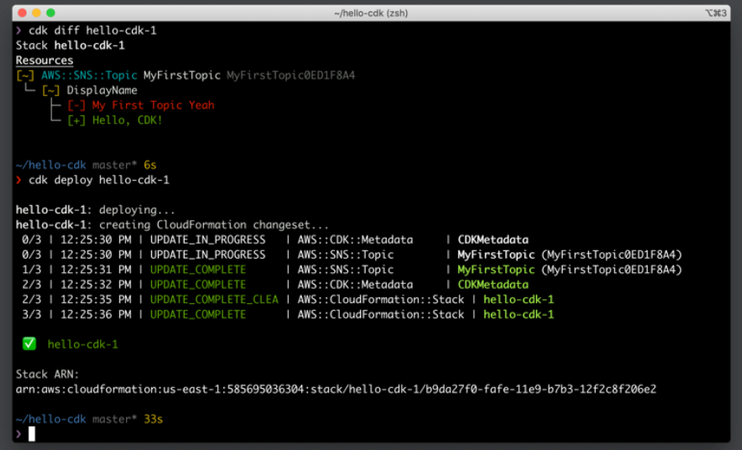


Main components

AWS CDK







Core Framework

AWS Construct Library

AWS CDK CLI

Demo scenario

WaltersCo service health monitoring

status.aws.amazon.com

SERVICE HEALTH DASHBOARD

Amazon Web Services » Service Health Dashboard

Get a personalized view of AWS service health

Open the Personal Health Dashboard

Current Status - Nov 21, 2019 PST

Amazon Web Services publishes our most up-to-the-minute information on service availability in the table below. Check back here any time to get current status information, or subscribe to an RSS feed to be notified of interruptions to each individual service. If you are experiencing a real-time, operational issue with one of our services that is not described below, please inform us by clicking on the "Contact Us" link to submit a service issue report. All dates and times are Pacific Time (PST/PDT).

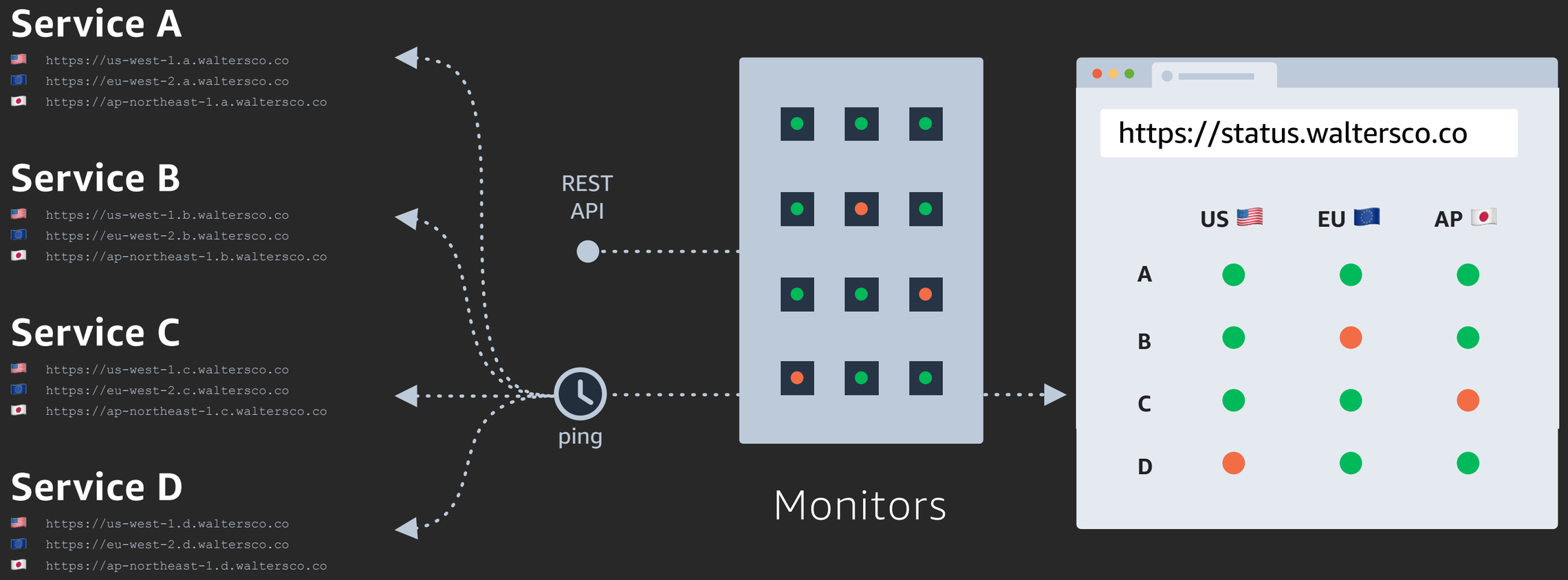
North America | South America | Europe | Asia Pacific | Middle East

Contact Us

Recent Events	Details	RSS
No recent events.		

Remaining Services	Details	RSS
Alexa for Business (N. Virginia)	Service is operating normally	
Amazon API Gateway (Montreal)	Service is operating normally	
Amazon API Gateway (N. California)	Service is operating normally	
Amazon API Gateway (N. Virginia)	Service is operating normally	

Service health monitor



WaltersCo Health Service

Demo

Part 1: Health monitor construct library

- Custom resources
- Nested stacks
- Singletons

Part 2: Packaging and publishing

- Packaging multi-language libraries with jsii
- Publishing multi-language libraries with aws-delivlib
- Multi-environment apps

Demo Part 1

AWS CloudFormation custom resources
Singleton pattern with the CDK
Nested stacks

Working backwards

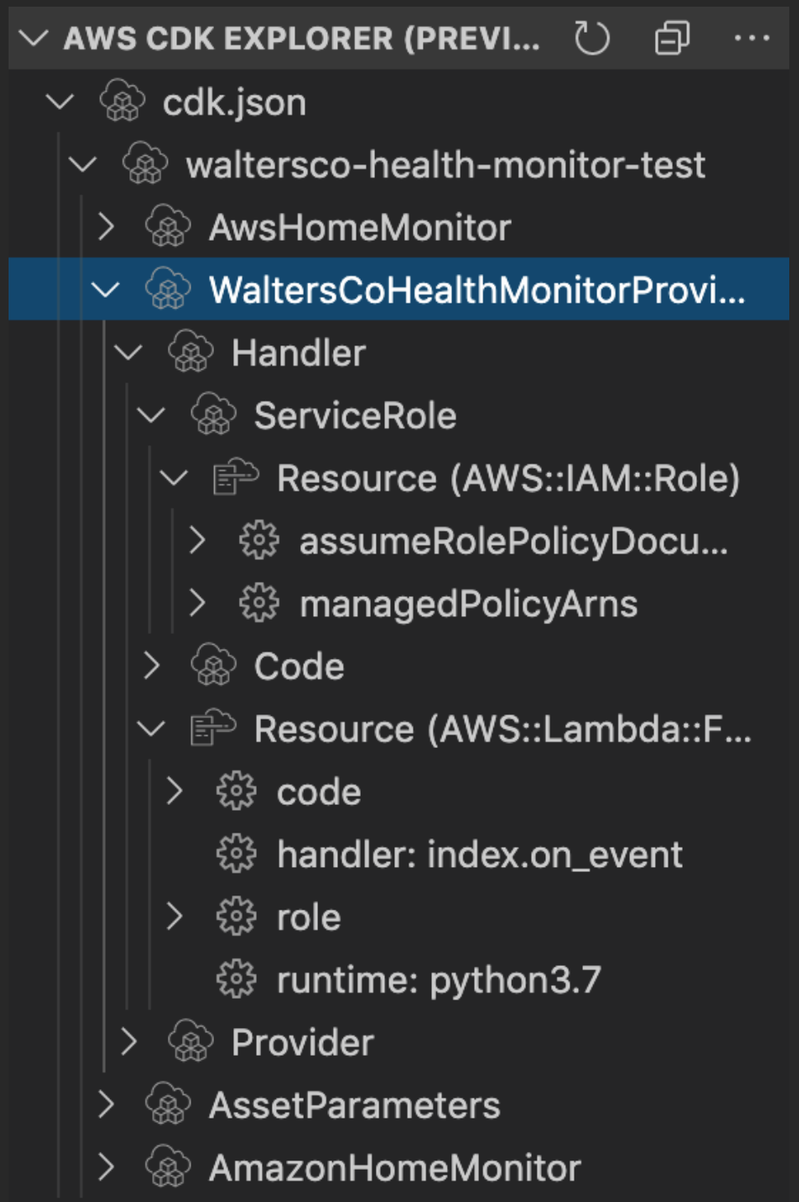
```
export class MyCoolServiceStack extends Stack {
  constructor(scope: Construct, id: string, props?: StackProps) {
    super(scope, id, props);

    const api = new apigw.RestApi(this, 'Api');

    // ...

    new walters.HealthMonitor(this, 'Monitor', {
      app: 'MyCoolService',
      region: 'us-east-1',
      endpoint: api.url
    });
  }
}
```

AWS CloudFormation custom resources

Demo Part 1: Recap

- Working backward from API
- Custom resources
  - Provider framework
  - AWS CloudFormation registry NEW!
- Singleton construct pattern
- Nested stacks

- CDK Explorer for VS Code NEW!
  - https://aws.amazon.com/vscode



Demo Part 2

Multi-language construct libraries
Publishing construct libraries
Multi-environment apps

Multi-language libraries

Multi-language libraries

```
export class WalterMonitor extends Construct {


}
```

Source (TypeScript)

JSii + TS Compiler

```
class WalterMonitor(Construct):
```

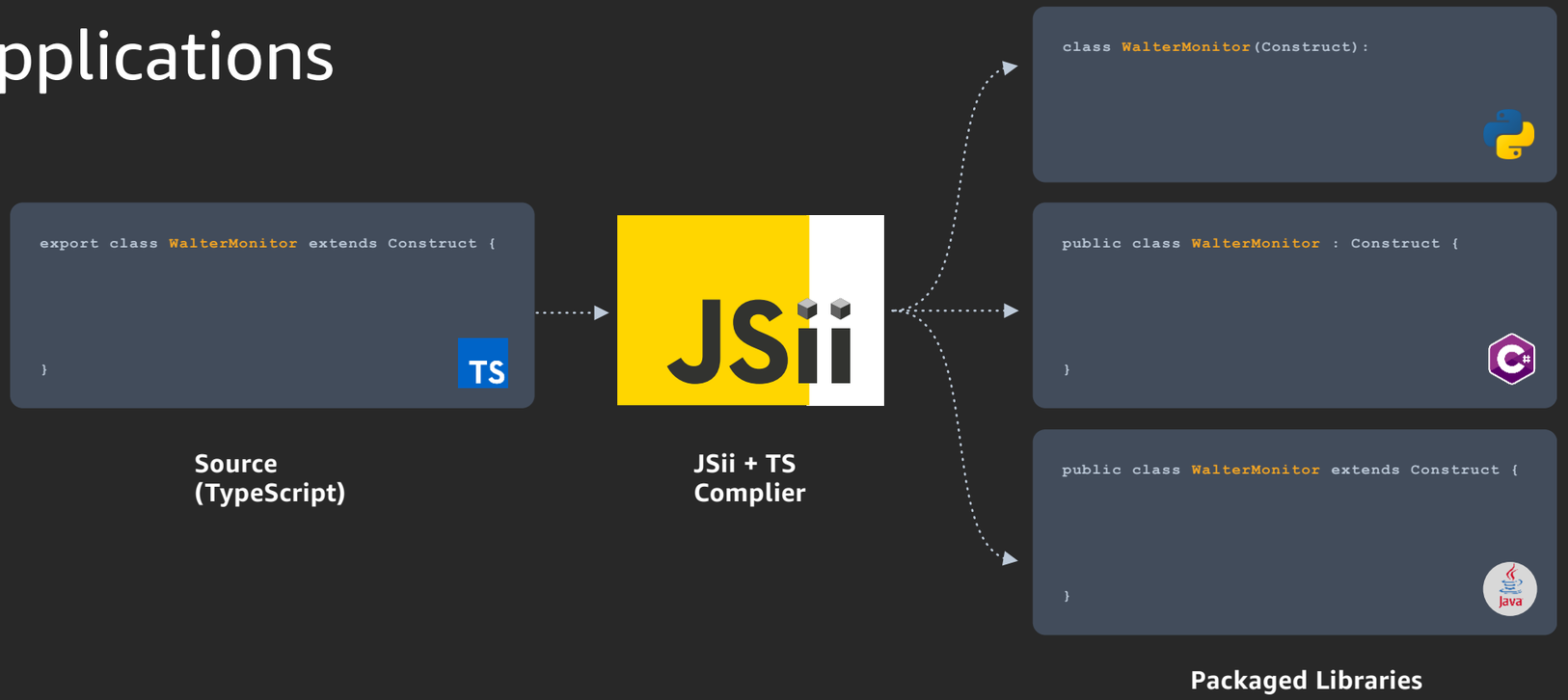
```
public class WalterMonitor : Construct {


}
```

```
public class WalterMonitor extends Construct {


}
```

Packaged Libraries

Demo Part 2: Recap

- Use jsii and jsii-pacmak to build and package
- jsii is a subset of TypeScript
  (not all features are supported)
- delivlib sets up delivery pipelines for libraries
- multi-environment applications



Wrap-up

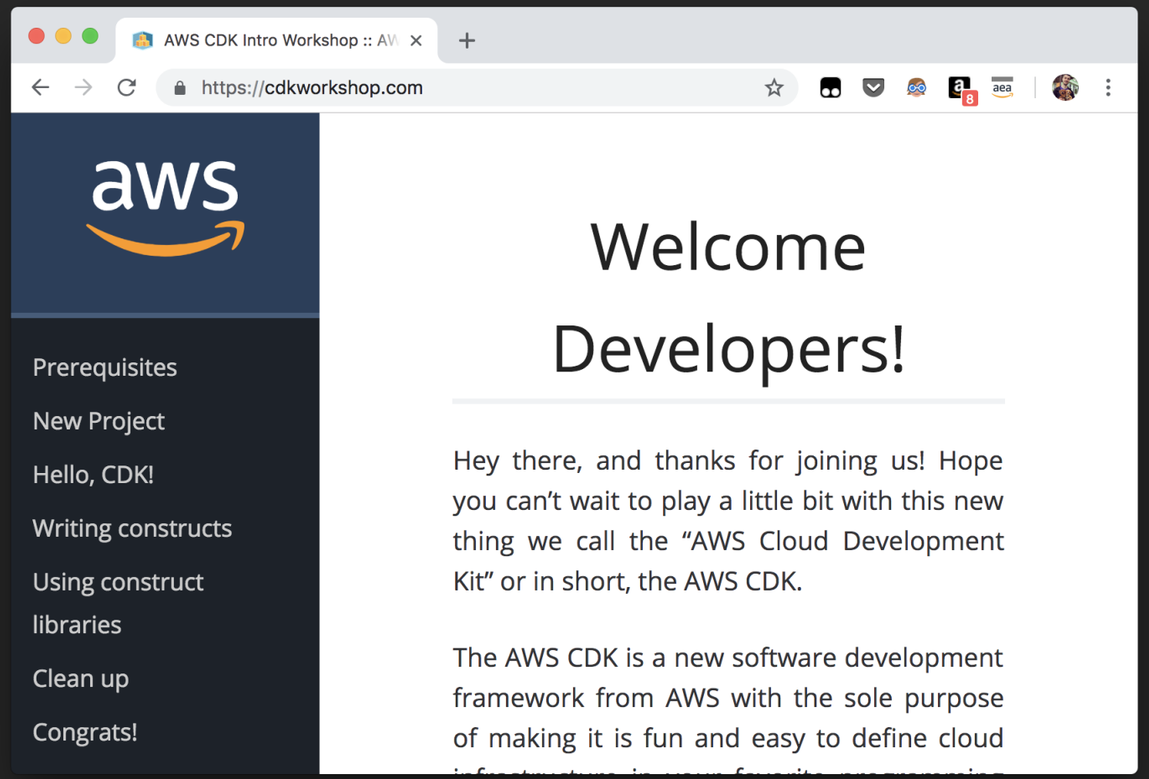
awesome-cdk

eladb/awesome-cdk

- Open CDK Guide opinionated set of tips and best practices
  - kevinslin/open-cdk
- punchcard type-safe AWS infrastructure
  - punchcard/punchcard
- aws-cdk-pure purely functional CDK
  - fogfish/aws-cdk-pure
- cdk-clj a clojure wrapper for the CDK
  - StediInc/cdk-clj
- cdk-components a collection of higher-level cdk constructs
  - cloudcomponents/cdk-components
- CDK GitHub Action
  - ScottBrenner/aws-cdk-action

Next steps

- **Get started**
  - cdkworkshop.com
  - aws.amazon.com/cdk
  - aws.amazon.com/vscode
- **Engage**
  - gitter.im/awslabs/aws-cdk
  - github.com/aws/aws-cdk
  - github.com/aws/jsii



#cdkdemos

Related breakouts

OPN205 Contributing to the AWS Construct Library

WIN310 Infrastructure as .NET with the AWS CDK

CON333 CI/CD using containers and AWS CDK

ARC321 Enabling AWS PrivateLink with the AWS CDK

ARC339 Best practices for IoT architecture using AWS smart product solution

CON420 Infrastructure as code for containers

DOP306 Building a scalable serverless application with AWS CDK

DOP311 Generating dynamic deployment pipelines with AWS CDK

DOP336 Serverless app infrastructure with the AWS Cloud Development Kit

DVC013 Using the AWS CDK construct libraries to meet enterprise compliance

MGF303 AWS smart product solution: Reference implementation for manufacturers

OPN314 Hosting resilient static sites using open-source tools

OPN315 Building Amazon EKS clusters with the AWS Cloud Development Kit

SVS327 Build serverless APIs with the AWS CDK

WIN303 Deploy modern apps with the AWS Cloud Development Kit for .NET Core

CDK Happy Hour

Wed 5–7 p.m.

Re:Match Bar
@Linq

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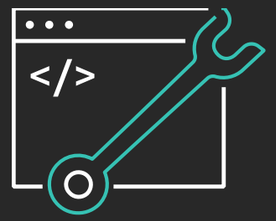

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Thank you!

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