

@codecentric

**Building event-driven  
serverless apps with AWS  
CDK**

## Agenda

- **What is AWS CDK**
- **Example Application**
- **CDK Setup**
- **Build and deploy**



## **What is AWS - Cloud development Kit (CDK)**

# AWS - cloud development kit (cdk)



**Infrastructure  
as code tool**



**Programming  
language to json  
parser**



**Cli tool to manage  
deployments**



**Pattern library to  
abstract common  
problems**

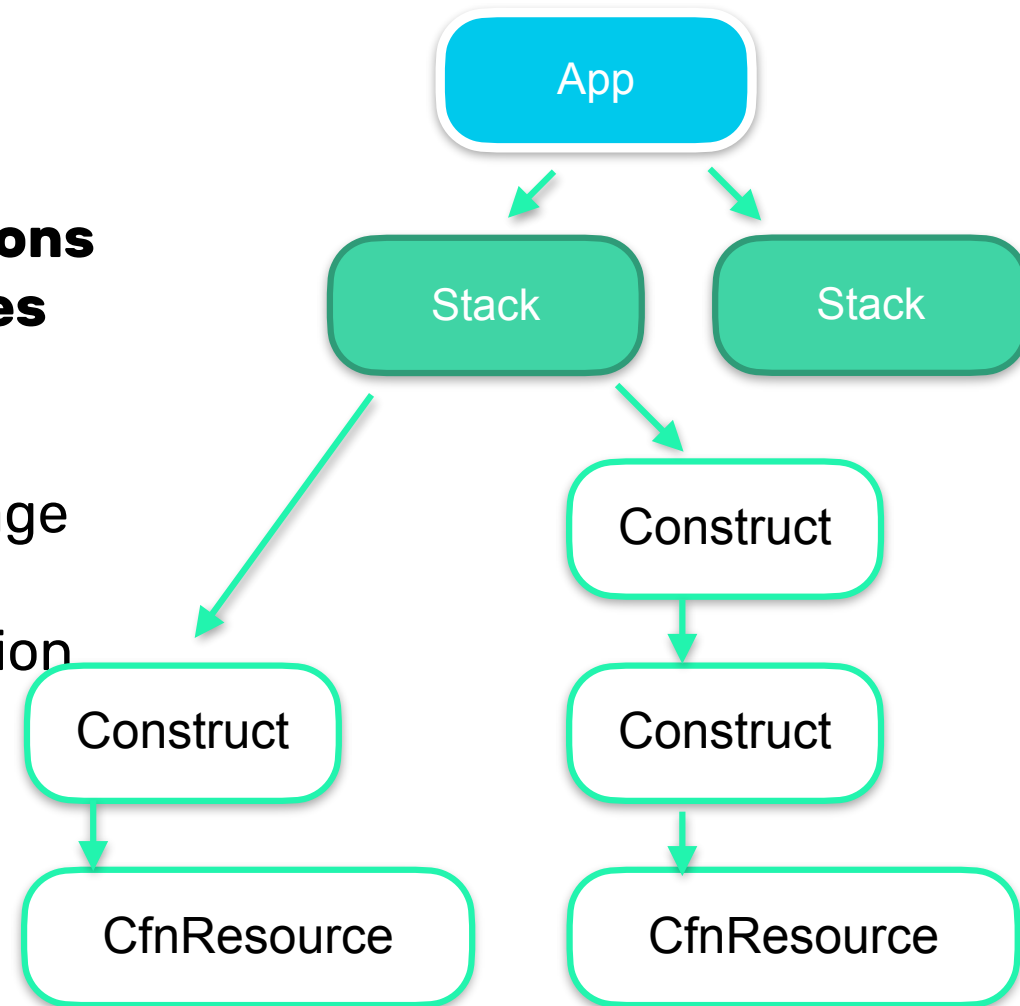


aws

**Cloud  
Development  
Kit**

# CDK - Basics

- **Define AWS resources as classes**
- **Tree based hierarchie of compositions**
- **Produces Cloudformation templates**
  - App = group of stacks
  - Stack = Cloudformation template
  - Construct = Programming language class to define resources
  - CfnResource = Class representation of a cloud formation resource



## Example Lambda function



```
1  const app = new cdk.App();
2  new AppStack(app, "AppStack", {});
3
```



```
1  export class AppStack extends cdk.Stack {
2      constructor(scope: Construct, id: string, props?: cdk.StackProps) {
3          super(scope, id, props);
4
5          const lambda = new NodejsFunction(this, "HelloWorldHandler", {
6              entry: "lib/hello-world-lambda.ts",
7              runtime: Runtime.NODEJS_16_X,
8          });
9
10     }
11 }
```



## Constructs - level of abstraction

- **3 - Level**
  - **L1 - Constructs**
    - 1:1 representation of a cloudformation resource (automatically generated from cloud formation spec)
  - **L2 - Constructs**
    - Extended version of cloudformation resource with helper functions like *grantInvoke*
  - **L3 - Constructs**
    - Opinionated pattern to solve common problems e.g. *Vpc* or *NodejsFunction*

## CDK - cli



### Setup

- Create a workspace
- Init was account



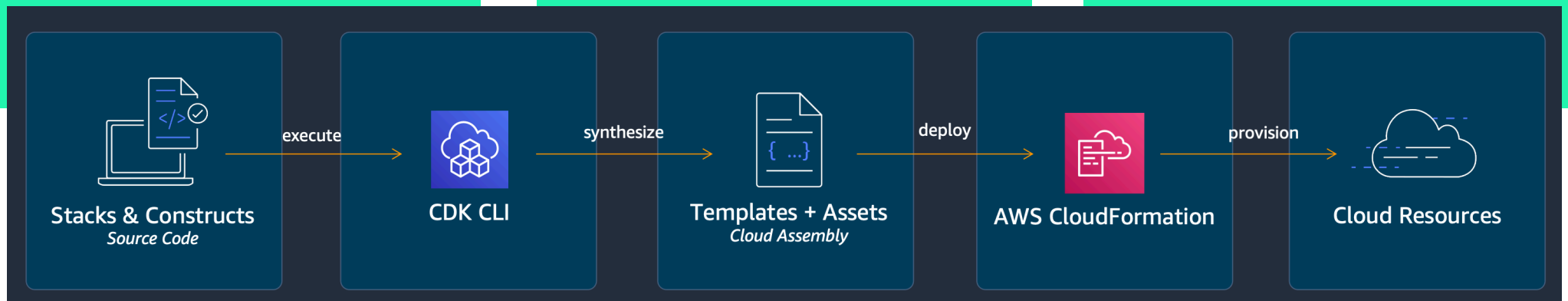
### Build

- Bundle assets
- Create template



### Deploy

- Show diff
- Upload assets
- Trigger cloudformation







## Sign in

### Root user

Account owner that performs tasks requiring unrestricted access. [Learn more](#)

### IAM user

User within an account that performs daily tasks. [Learn more](#)

Account ID (12 digits) or account alias

Next

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aws Services

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Services (71)

Features (90)

Blogs (5,497)

Documentation (14)

Knowledge Articles (30)

Tutorials (22)

Events (96)

Marketplace (6,202)

Search results for 'system manger'

## Services

**Systems Manager** ★  
AWS Systems Manager is a Central Place

### Top features

[Quick Setup](#) [Explorer](#) [OpsCenter](#) [CloudW](#)

**EFS** ☆

Managed File System for EC2



Services

Search for ser

Elastic Beanstalk

EC2

Resource G

## AWS Systems Manager



### Quick Setup

### Operations Management

Explorer

OpsCenter

CloudWatch Dashboard

Incident Manager

### Application Management

Application Manager

AppConfig

Parameter Store

aws

Console Home

Services

Search for services, features, blogs, docs, and more

[Option+S]

Elastic Beanstalk EC2 Resource Groups & Tag Editor CloudWatch CloudFormation Elastic Container Service S3 Lambda CloudFront Step F



AWS Systems Manager > Parameter Store

My parameters

Public parameters

Settings

### My parameters

Search

<input type="checkbox"/>	Name	Tier	Type
<input type="checkbox"/>	/cdk-bootstrap/root/version	Standard	String
<input type="checkbox"/>	AccessKeyId	Standard	String
<input type="checkbox"/>	SecretAccessKey	Standard	String

aws

Services

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[Option+S]

Elastic Beanstalk

EC2

Resource Groups & Tag Editor

CloudWatch

CloudFormation

Elastic Container Service

S3

Lambda

CloudFront

Step Functions

Menu

AWS Systems Manager > Parameter Store > AccessKeyId > Overview

AccessKeyId

OverviewHistoryTags

Name

AccessKeyId

Tier

Standard

Type

String

Last modified date

Thu, 06 Oct 2022 15:06:38 GMT

Value

AKIA57IRA7AN2IAJXYU3

Description

-

Data type

text

Last modified date

arn:aws:sts::123456789012:assumed-role/lambda-role/lambda-fn

Version

1

## CDK - aws account setup

- **Setup aws-cli**
  - `aws configure ( -- profile <profile-name>)`
  - Set ***access-key-id*** and ***secret-access-key***
- **Setup aws-cdk-cli**
  - `npx aws-cdk init app -l typescript`
- **Open folder in IDE**
- **Open terminal in folder**
  - `npm run cdk bootstrap ( -- profile <profile-name>)`

## Hello World Lambda

[https://docs.aws.amazon.com/cdk/api/v2/docs/aws-cdk-lib.aws\\_lambda\\_nodejs-readme.html](https://docs.aws.amazon.com/cdk/api/v2/docs/aws-cdk-lib.aws_lambda_nodejs-readme.html)

npm install -D esbuild -> build lambda without docker

npm install -D @types/aws-lambda -> Aws event types