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AWS CDK - Beyond the Introduction

Jason Butz

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About the talk

The AWS CDK is a development framework that allows you to define your cloud application resources and infrastructure using programming languages instead of configuration files. By defining your resources as code you can benefit from your normal development tooling and more easily define your application.

This talk discusses key AWS CDK concepts, provides tips for AWS CDK usage, and an overview of AWS CDK Best Practices.

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Solution Architect & Practice Lead @ DMI

CDK Summary

- Define resources using programming languages, not YAML/JSON files
- Define constructs that encapsulate one or more resources into reusable objects
- Abstract complex configuration and streamline resource definitions
- Translates code to CloudFormation template(s)
- CLI tools

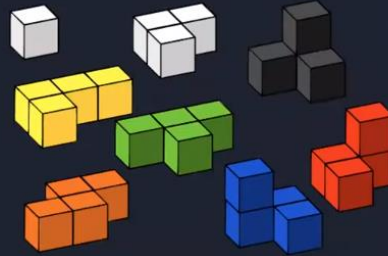
Don't Put It All In the Constructor!

Use constructs and methods to break up the code



L3 Constructs

- Create your own!
 - Encapsulate complex configuration
 - Compose resources into reusable patterns
- Use AWS's *Solution Constructs*



One App – Multiple Stacks

- More than nested stacks
- Multiple regions, multiple accounts



Example: Deployment Environments

```
const app = new App()

new SampleStack(app, 'production', {
  env: { region: 'us-east-1', account: '999999999999' },
  hostname: 'myapp.example.com',
})

new SampleStack(app, 'staging', {
  env: { region: 'us-east-1', account: '000000000000' },
  hostname: 'myapp-staging.internal.example.com',
})
```

We are deploying the same App into the same region, 2 different AWS accounts and different host names for staging and production. You can use the CLI to specify which environment to deploy into.

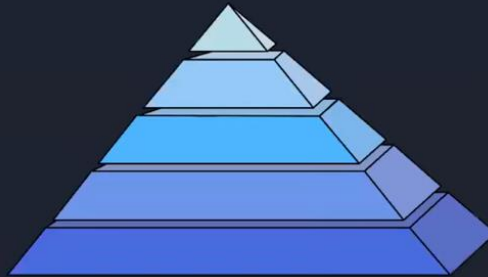
Example: jasonbutz.info



This gives multi-region setup for our website using the same CDK App in 3 separate stacks. The base configuration for the S3 bucket is the same for the 2 regions, we have a CDK Stack class that defines those S3 bucket.

Automated Testing

- Focus on:
 - Important constructs
 - Critical infrastructure
- Snapshotting



You can unit test specific constructs and stacks for the values that you need. You can also use snapshots in TS to enable version control in your code and test those in your unit tests.

Pipelines



CDK pipelines is a place where we can level up when using CI/CD.

Avoid Non-Deterministic Behavior

- Same input → Same output
- Limit arbitrary lookups and avoid side effects

Review

- Don't put it all in the constructor
- L3 constructs
- One app – multiple stacks
- Unit test, when appropriate
- CDK Pipelines
- Avoid non-deterministic behavior



- [AWS CDK v2 - What is the AWS CDK?](#)
- [AWS CDK v2 - Best practices for developing and deploying cloud infrastructure with the AWS CDK](#)
- [AWS CDK v2 - Runtime context](#)
- [AWS Solutions Constructs - Overview](#)
- [AWS CDKv2 - CDK Pipelines](#)
- [CDK Pipelines for GitHub Workflows](#)
- [Construct Hub](#)