

Deployment & Managing Infrastructure

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CLOUD FORMATION:

- * A declarative way of outlining your AWS infrastructure, for any resources.
- * For eg, within a **CloudFormation template**, you say:
 - I want a Security Group
 - I want few EC2 instances
 - I want an S3 bucket
 - And a Load Balancer.
- * Then the CloudFormation creates them for you in right order with exact configuration you specify.

BENEFITS:

- * Infrastructure as Code
 - No resources are manually created
 - Changes to infrastructure are reviewed through code.

Cost:

- Can easily estimate the costs of your resources using the template
- Savings Strategy: In Dev, you can automate deletion of templates at 5 PM & recreate them at 8 AM, safely.

CLOUD DEVELOPMENT KIT:

- * Define your cloud infrastructure using a familiar programming language.
- * Then the code is "compiled" to CloudFormation template (JSON/YAML).
- * Therefore, you can deploy infrastructure and application runtime code together.
 - * Great for Lambda functions
 - * Great for Docker containers.
- * Compilation is done using CDK CLI.

BEANSTALK:

- * It is developer centric view of deploying the code
- * Makes it easier for developers to just concentrate on the code.
- * Beanstalk → **Platform as a Service (PaaS)**
- * Beanstalk is free but you pay for underlying resources.
- * Managed service

3 Architecture Models:

- * Single instance deployment (Dev)
- * LB + ASG: Good for production
- * ASG: Great for non-web apps.

Beanstalk Health Monitoring:

- * Health agent pushes metrics to Cloudwatch.
- * Check for app health, public health events.

Code Deploy:

- * **Deploys our application automatically.**
- * Works with EC2 instances as well as On-premises - making it **HYBRID**.
- * Servers & instances must be provisioned and configured ahead of time with Code Deploy Agent.

Code Commit:

- * Source Control Service that **hosts Git based Repositories**
- * Makes it easy to collaborate with others.
- * The code changes are automatically versioned.

Code Build:

- * Compiles source code, runs tests and produces packages that are ready to be deployed.
- * Pay as you go - only for build time.

Code Pipeline:

- * Builds a pipeline that has **Code → Build → Test → Provision → Deploy**.
- * Basically, it is the concept of CI/CD in AWS.

Code Artifac:

- * Storing & retrieving software packages / dependencies - **Artifact Management System**
- * Works with dependency management tools such as Maven, Gradle, npm, yarn, pip etc.
- * Developers and CodeBuild can retrieve the necessary dependencies from CodeArtifac.

CodeStar:

- * **Unified UI** to easily manage software dev process / activities.
- * Provides you a dashboard where you can manage activities.

Cloud9:

- * It is a cloud IDE, helps in coding in cloud w/o installing any IDE in local machine.
- * It also allows for code collaboration in real-time (pair programming).

AWS SYSTEMS MANAGER (SSM)

- * Helps you manage your EC2 & On-premises systems at scale.

Another Hybrid Service:

- * Main features:
 - **Patching automation** for enhanced compliance
 - Run commands across an **entire fleet of servers**.

- * Store parameter configuration at **SSM store**.

SSM Parameter Store:

- * Secure storage for configuration & secrets.
- * Serverless, scalable & durable

- * **Control access permission using IAM.**

