Management & Governance

Amazon Web Services

Application Integration

- Amazon CloudFormation
- Amazon CloudWatch
- Amazon CloudTrail
- Amazon Config
- AWS Organizations
- Amazon Trusted Advisor

Amazon CloudFormation

Amazon Web Services

Amazon CloudFormation

With Amazon CloudFormation you can design and deploy a collection of related AWS resources that can then be customized into a template for repeat deployment. You can then provision and/or update your resources in an orderly with predictable outcomes.

CloudFormation templates can be modified and updated in a controlled manner and you use version control to build your AWS infrastructure. You can also visualize your templates as diagrams and edit them using a drag-and-drop interface with the **AWS CloudFormation Designer**.

AWS CloudFormation

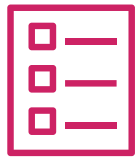
Amazon CloudFormation

Business Use Cases

- Quickly Launch Test and Dev Environments
- Replicate Configuration between environments
- Launch Applications in new AWS regions

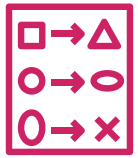
Amazon CloudFormation Concepts

With CloudFormation, you work with templates and stacks. You create templates to describe your AWS resources and their properties. Whenever you create a stack, AWS CloudFormation provisions the resources that are described in your template.



Template

Stack



Change set

Amazon CloudFormation Concepts

Templates – Key Points

- You can create templates that describe AWS resources (for example, with EC2 instances, you can specify instance type, the AMI ID, block device mappings, and its Amazon EC2 key pair name), its associated dependencies and any configuration items that need to defined for successful deployments.
- CloudFormation templates are written in **JSON** or **YAML** format.
- You can then deploy your resources taking care to ensure that these services are deployed in the correct order and provision all backend infrastructure required using the **DependsOn** attribute.
- Additional parameters can be added at run time whose values are specified when you create an AWS CloudFormation stack.
- You can deploy and update a template and its associated collection of resources (called a stack) by using the AWS Management Console, AWS Command Line Interface, or APIs. CloudFormation.

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Amazon CloudFormation Concepts

Template Format - Example

JSON Fomat

```
{
  "AWSTemplateFormatVersion" : "2016-05-06",
  "Description" : "A simple EC2 instance",
  "Resources" : {
    "MyEC2Instance" : {
      "Type" : "AWS::EC2::Instance",
      "Properties" : {
        "ImageId" : "ami-6g878987",
        "InstanceType" : "t1.micro"
      }
    }
  }
```

Amazon CloudFormation Concepts

Stacks

When you use AWS CloudFormation, you manage related resources as a single unit called a **stack.** The resources that go on to build your stack are already described in your template.

- Templates can describe Auto Scaling group, Instance types, EIPs, Elastic Load Balancing load balancer, and an Amazon Relational Database Service (Amazon RDS) database instance.
- To create these resources in your template, you create a stack and submit your template. Amazon CloudFormation will then provision your resources as described in your template.

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Amazon CloudFormation Concepts

Code your infrastructure from scratch with the CloudFormation template language, in either YAML or JSON format, or start from many available sample templates

Check out your template code locally, or upload it into an S3 bucket

Use AWS CloudFormation via the browser console, command line tools or APIs to create a stack based on your template code

AWS CloudFormation provisions and configures the stacks and resources you specified on your template

Amazon CloudFormation Concepts

Changed Sets

Sometimes you might need to make changes to the running resources in a stack. You can generate a **change set**, which is summary of your proposed changes. Change Sets allow you to see how your changes might impact your running resources, especially for critical resources, before implementing them.

AWS CloudFormation makes the changes to your stack only when you decide to **roll out** a change set, and thus you get to decide whether to proceed with your proposed changes or explore other changes by creating another change set.

Amazon CloudFormation Concepts

Permissions

- Although you can create templates which can then be used to create a stack of your underlying resources, you still need to ensure that you have the appropriate permissions to deploy those resources.
- You can use IAM to configure necessary permissions for your team so that only authorized personnel can create and deploy resources and therefore use CloudFormation to automate the task

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Amazon CloudFormation Concepts

- CloudFormation is available free of cost, but you still have to pay for the underlying resources you deploy from your template.
- CloudFormation vs. ElasticBeanstalk

Next Video