**AWS Cloud Formation Docs |**

**Why AWS Cloud Formation?**

**What is Cloud Formation?**

**Get started in CloudFormation.**

**Structure of JSON Documents**

**Sample JSON**

**Demo:**

**Why Cloud Formation?**

A complex application on AWS can have many resources and managing all these resources can be a mundane task.

Part-1:

**Introduction to CloudFormation**

**What is Aws CloudFormation?**

* AWS CloudFormation is a service that helps you model and set up your resources so that you can spend less time managing those resources and more time focusing on your application that runs in AWS.
* Aws CloudFormation is a services that helps you model & set up your Amazon web services resources so that you can spend less time managing those resources and more time focusing

On your applications that run in AWS.

* You create a template that describes all the AWS resources that you want (like Amazon EC2 instance or Amazon RDS DB instances), and CloudFormation takes care of provisioning and configuring those resources for you.
* You don’t need to individually create and configure AWS resources and figure out what’s dependent on What: CloudFormation handles that.
* The following scenarios demonstrate how CloudFormation can help.
* Simplify infrastructure management.
* Quickly replicate your infrastructure
* Easily control and track changes to your infrastructure

**Structure of JSON Documents**

* AWS Template Format Version
* Description
* Metadata
* Parameters
* Mapping
* Conditions
* Outputs
* Resources

**Define the AWS CloudFormation concepts?**

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

What is AWS CloudFormation Template?

* A CloudFormation template is a JSON, or YAML formatted text file.
* You can save these files with any extension, such as. JSON, YAML, Template, or .txt
* CloudFormation uses these templates as a blueprint for building your AWS resources.
* For example, in a template, you can describe an Amazon EC2 Instances such as the instance type, the AMI ID, Block device mapping, and its amazon EC2 Key pair name.
* Whenever you create a stack, you also specify a template that CloudFormation uses to create whatever you described in the template.
* For example, if you created a stack with the following template. CloudFormation provision an instance with an ami-0e42bfd2029a917a4 AMI ID, t2. micro instance type, test key pair name , and an Amazon EBS volume.

**What is AWS CloudFormation Stack?**

* When you use CloudFormation, you manage related resources as a single unit called a stack.
* You create ,update and delete a collection of resources by creating ,updating and deleting stack.
* All the resources in a stack are defined by the stack’s CloudFormation template.
* Suppose you created a template that includes an auto scaling group, Elastic Load Balancing Load and an Amazon Relational Database Services (Amazon RDS ), databases instance.
* To create those resources, you create a stack by submitting the template that you created and CloudFormation provisions all those resources for you.
* You can work with stacks, by using the CloudFormation console ,API, or AWS Cli.

**What is AWS CloudFormation Change sets?**

* If you need to make changes to the running resources in a stack , you update the stack.
* Before making changes to your resources ,you can generate a change set, which is a 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.
* For example, if you change the name of an Amazon RDS Database instance, CloudFormation will create a new database and delete the old one.
* You will lose the data in the old database unless you have already backed it up.
* If you generate a change set ,you will see that your change will cause your database to be replaced , and you will be able to plan according to before you update your stack.

Learn More: <https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/Welcome.html>

Part:2 (AWS Cloud Formation with LAB)

Introduction to YAML

What is YAML?

* YAML is a programming Language.
* Basically, it is used to write a configuration file.
* In AWS, it is also used to write a CloudFormation template.

What are the main components or topics used for AWS Cloud Formation?

* YAML Key value pairs.
* YAML Lists
* YAML Dictionary
* YAML list containing dictionaries.
* YAML lists containing.
* YAML Pipe
* YAML greater Than
* YAML comments

What IS YAML Key-Value Pairs?

* YAML documents will be full of key value pairs.
* Key and value are separated by colon.
* We must have a space after the colon differentiating the value.
* YAML Support different data types.
* Integer
* Floating point numbers
* String
* Boolean
* Dates-Format: ISO 8601
* Null Values:
* Important Notes for String :Quote String when they have special characters like colons:,braces{},Pipes|,brackets[]

**What is YAML-List /Array**

* YAML list indented with opening dash.
* Dash indicates that it’s an element of an array.
* All Members of a list are lines beginning at the same indentation level staring with a”-“(a dash and a space).
* Block Sequence is written as a comma separated list within square brackets.

What Is YAML Dictionary /MAP?

* YAML Dictionaries are a set of properties grouped together under an item.
* YAML Dictionaries contain key value pairs.

What is YAML List Containing Dictionaries?

Persons:

  -Dave:

    Age:25

    Occupation: Engineer

    State: California

 -John:

    Age: 25

   Occupation: Software Developer

   State: Florida

   Ram:

    Age:30

    occupation: IT Head

    State: USA

What is the YAML list Containing Dictionaries Lists?

Persons:

  -Dave:

    Age:25

    Occuption: Engineer

    State: California

    Degrees:

    -Bacheleors:

    -Masters:

    -PHD:

 -John:

    Age: 25

   Occuption: Software Devleoper

   State: Florida

   Degres: (Bachleros,Masters)

   Ram:

    Age:30

    occuption: IT Head

    State : USA

    Degress:

    -Masters

What is YAML Pipe?

* The pipe notation, also referred to as literal block.
* All new lines, indentation, extra spaces everything’s preserver as is.
* Dave:
* Age:25
* Occupation: Engineer
* State: New Jersey
* gpa: 4.5
* male: true
* Address:
* 201 ABC Street
* Newark
* New Jersey 07102
* 999-999-9999

What is YAML Greater Than Sign?

* The greater than sign notation, also referred to as folded block.
* Renders the text as a single line.
* All new lines will be replaced with a single space.
* Blank lines are converted to new line characters.

What iss YAML Comments?

* We can have comments in YAML with # sign. Below is an example.

# This is a person profile

Dave:

  Age: 25

  Occupation: Engineer

  State: New Jersey

  gpa: 4.5

  Male: true

Part :3 (AWS Cloud Formation)

Introduction to Stack:

A stack is a collection of AWS resources that you can manage as a single unit. In other words, you can create, update or delete a collection of resources by creating, updating, or deleting stacks. All the resources in a stack are defined by the stack’s AWS CloudFormation template.

What are the Pre-Requisites for Stack Features?

* Step 00: Pre-requisites
* Create Default VPC (if not present)
* Create Key airs.
* Cfn-Key-1
* Cfn-Key-2
* Gather AMI ID
* AWS Console
* Create the default VPC.
* Action>Default VPC? Create.
* Auto Created.
* Subnet
* Main Route Table
* Internet Gateway
* Create Key Pair
* Cfn-Key-1
* Cfn-Key-2
* Copy AMI ID
* Launch & You will see here.

Define Stack Features?

Step 01: Stack Features

* Create Stack
* Update Stack
* Create Change Sets
* Rollback.

Steps to Create Stack?

Step 1: Create YAML file for the stack to create resources.

AWSTemplateFormatVersion: 2010-09-09

Resources:

  webserver01:

    Type: 'AWS::EC2::Instance'

    Properties:

      ImageId: ami-0e42bfd2029a917a4

      InstanceType: t2.micro

      KeyName: HS1

Part :5(AWS Cloud Formation with LAB)

Change the keypair:

Step 1: Update YAML file to change Set-Key Name Stack to create resources.

AWSTemplateFormatVersion: 2010-09-09

Resources:

  Webserver01:

    Type: 'AWS::EC2::Instance'

    Properties:

      ImageId: ami-06c2ec1ceac22e8d6

      InstanceType: t2.micro

      KeyName: Webserver2

Part :6(Aws CloudFormation with Lab)

Steps to create Change Set-InstanceType Stack?

Step1: update the YML File for change set Instance type stack to create resources:

Old YML File:

AWSTemplateFormatVersion: 2010-09-09

Resources:

  Webserver01:

    Type: 'AWS::EC2::Instance'

    Properties:

      ImageId: ami-06c2ec1ceac22e8d6

      InstanceType: t2.micro

      KeyName: Webserver2

New YML File:

AWSTemplateFormatVersion: 2010-09-09

Resources:

  Webserver01:

    Type: 'AWS::EC2::Instance'

    Properties:

      ImageId: ami-06c2ec1ceac22e8d6

      InstanceType: t2.small

      KeyName: Webserver2