MODULE 12

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**AWS Elastic Beanstalk:** Elastic Beanstalk automatically handles the deployment details of capacity provisioning, load balancing, automatic scaling, and application health monitoring of an application. In many ways, using Elastic Beanstalk is like running a macro or a batch file that places a wrapper around an existing application so that it runs smoothly in the Amazon Web Services (AWS) Cloud.

**AWS CloudFormation:**This service gives developers and businesses an easy way to create a collection of related AWS resources and provision them in an orderly and predictable fashion. CloudFormation provides a means for combining a stack of AWS services, similar to writing macros or batch files in Linux or Microsoft Windows.

**Stack:** A collection of AWS resources that you can manage as a single unit. You can create, update, or delete a collection of resources by creating, updating, or deleting stacks.

**Elastic Beanstalk:**

Elastic Beanstalk is an easy-to-use service for deploying and scaling web application and services dropped with Java, .NET, PHP, Node.js, Python, Ruby, Go and Docker on familiar servers such as Apache, Ngix, Passenger, and IIS.

Benefits of Elastic Beanstalk:

* Fast and simple to begin
  + It is the fastest and simplest way to deploy your application on AWS.
* Developer Productivity
  + It provisions and operates the infrastructure and manages the application stack (platform) for you, so you don’t have to spend the time or develop the expertise
* Impossible to outgrow
  + It automatically scales your application up and down based on your application’s specific need suing easily adjustable automatic scaling settings
* Complete resource control
  + You have the freedom to select the AWS resources, such as Amazon Elastic Compute Cloud (Amazon EC2) instance type, that are optimal for your application

**CloudFormation**

CloudFormation provides a common language for you to describe and provision all the infrastructure in your cloud environment. CloudFormation lets you use programming languages or a simple text file to model and provision, in an automated and secure manner, all the resources needed for your applications across all AWS Regions and accounts.

Benefits of CloudFormation:

* Model it all
  + It lets you model your entire infrastructure with a text file or programming languages
* Automate and Deploy
  + It provisions your resources in a safe, repeatable manner, letting you build and rebuild your infrastructure and applications, without having to perform manual actions or write custom scripts
* It’s code
  + Codifying your infrastructure lets you treat your infrastructure as code

CloudFormation works as follows. The first step is to code your infrastructure fram scratch with the CloudFormation template language, in either YAML or JSOM format, or start from many available samples. The next step is to check your template code locally, or upload it into an S3 bucket. The next stem is to use AWS CloudFormation via the browser console, command line tools, or APIs to create a stack based on your template code. Finally, AWS CloudFormation provisions and configures the stacks and resources you specified on your template.

**Elastic Beanstalk vs CloudFormation**

These services are designed to complement each other. Elastic Beanstalk provides an environment to easily fdeploy and run applications in the cloud. It is integrated with developer tools and provides one-stop experience for you to manage the life cycle of your applications. CloudFormation is a convenient provisioning mechanism for a broad range of AWS resources. It supports the infrastructure needs of many different types of aplications such as existing enterprise applications, legacy applications, and applications built using a variety of AWS resources and container-based solutions.

To be clear, Elastic Beanstalk is like running a .bat file and CloudFormation is like writing a .bat file. Elastic Beanstalk lets developers upload and run their code; it then does all the behind-the-scenes cloud setup such as launching EC2 instances and attaching elastic block storage. With CloudFormation, you are basically setting up a template for all of the cloud resources you want to run so that is can all be done at once and in a repeatable way.

CloudFormation supports Elastic Beanstalk application environments as one of the AWS resources types. This lets, for example, create and manage an application hosted by Elastic Beanstalk, along with an Amazon Relational Database Service(Amazon RDS) database to store the application data. In addition to RDS DB instances, an other supposed AWS resources can be added to the group as well.

**Lab 12: Using Elastic Beanstalk and CloudFormation**

1. Services > Compute Services >Elastic Beanstalk
2. Create Application : name- MyLabApp, platform-PHP, Application-sample > Next
3. Select the default options in the page and go next
4. Select 2 Availability Zones and go next
5. Default security group > Next
6. Health Reporting > Basic then Deselect Manages updates > Submit
7. Download PHP.zip from website > Upload to Beanstalk
8. Services > Compute Services > EC2 > Network and Security > Key Pairs
9. Create key pair > custom name > create
10. Services > Management and Governance > CloudFormation > Create stack > with new resource
11. Use a sample template > WordPress blog > Next > custom details > Next > Next