**AWS Assignment 3**

1. Explain the concept of auto-scaling.

**Answer:** AWS Auto Scaling monitors your application and automatically adjusts its capacity to maintain stable and predictable performance at the lowest possible cost. With AWS Auto Scaling, you can easily set up application scaling to multiple resources across multiple services in minutes. This service provides a simple and powerful user interface that you can use to create scaling plans for resources such as Amazon EC2 instances and spot fleets. AWS Auto Scaling simplifies scaling with recommendations that can optimize performance, cost, or the balance between them. With AWS Auto Scaling, your applications always have the right resources at the right time. Autoscaling provides Setup scaling quickly, Make smart scaling decisions, Automatically maintain performance, Pay only for what you need.

1. Explain Cloud Formation Solution.

**Answer:** CloudFormation is AWS's infrastructure automation platform that provisions AWS resources in a repeatable, testable, and auditable way. This is an AWS service that uses template files to automate the setup of AWS resources. It can also be referred to as infrastructure automation or Infrastructure-as-Code (IaC) tools and cloud automation solutions because it can automate the setup and deployment of various Infrastructure-as-a-Service (IaaS) offerings on AWS. CloudFormation supports almost any service running on AWS. When you run a service on AWS, you can certainly use CloudFormation to automate its configuration and deployment. Keep in mind that CloudFormation is not the only way to configure and provision services on AWS.

1. Mention and explain AWS services that are not specialized to a specific location.

**Answer: AWS Services which are not region specific are mentioned below:**

1. **AWS IAM:** AWS Identity and Access Management (IAM) is a web service that you can use to securely control access to AWS resources. Use IAM to control who authenticates (signs in) and authorizes (permits) the use of resources.
2. **AWS Cloudfront:** Amazon CloudFront is a content delivery network (CDN) service built for high performance, security, and developer convenience.
3. **AWS Global Accelerator:** AWS Global Accelerator is a network service that uses Amazon Web Services' global network infrastructure to improve user traffic performance by up to 60%.
4. **AWS Personal Health Dashboard:** AWS Personal Health Dashboard provides alerts and guidance for AWS events that can impact your environment. The Service Health Dashboard shows the overall status of AWS services, while the Personal Health Dashboard provides proactive and transparent notifications about a particular AWS environment.
5. **AWS Organizations:** AWS Organizations is an account management service that allows you to integrate multiple AWS accounts into one organization, create them, and manage them centrally. Organizations can create member accounts and invite existing accounts to the organization.
6. What's the difference between pausing and terminating an Amazon Elastic Compute Cloud instance?

**Answer:**

|  |  |  |
| --- | --- | --- |
| **Difference** | **Pausing/Stopping EC2 Instance** | **Terminate EC2 Instance** |
| **Host computer** | After being paused/stopped, once restarted, an instance will be moved to a new host computer | Instance is lost |
| **IP Addresses** | **IPv4 addresses** – Instances keep their private IPv4 addresses. When restarted, it will get a new public IPv4 address **Elastic IP addresses (IPv4)** – Exception to the above is Elastic IP addresses, which will persist after an instance is stopped and restarted **IPv6 addresses** – Instances retain IPv6 addresses when stopped and restarted | **IPv4 addresses** – IPv4 is lost. **Elastic IP addresses (IPv4)** – the Elastic IP address is disassociated from the instance **IPv6 addresses** – IPv6 is lost |
| **Instance store volumes** | Data is erased when paused/stopped | Data is erased when terminated |
| **Root device volume** | Volume attached to the instance is preserved | Volume is deleted by default |
| **RAM** | RAM is erased when paused/stopped | RAM is erased when terminated |
| **Billing** | Not billed for stopped EC2 instances | Not billed for terminated EC2 instances |

1. Describe how to set up CloudWatch to recover an EC2 instance.

**Answer:**

If your instance fails a health check, you can use CloudWatch alarm actions to automatically recover your instance. Restore options are available on over 90% of deployed Amazon EC2 instances. However, the restore option works only for system check errors, not for status check errors, etc. Also, once you terminate the instance, you will not be able to restore it.

**Steps to Setup CloudWatch to Recover EC2 Instance:**

* Open the Amazon EC2 console.
* In the navigation pane, select Instance.
* Select the instance you want to configure.
* Select Actions, then Monitor and Troubleshooting. Then select Manage CloudWatch Alarms.
* Select Create Alert. Note: To create an alarm, you need AWS Identity and Access Management (IAM) permissions to stop and start the associated instance. For more information, see Creating an IAM Role.
* For alert notifications, select an existing Amazon Simple Notification Service (Amazon SNS) topic.
* For information on creating a new topic, see Creating an Amazon SNS Topic. Note: You must subscribe to an SNS topic to be notified when an alarm is triggered.
* Turn on the alarm action, then select Restore. Under Sample grouping and Data type to sample, select the appropriate statistics and metrics for your use case. Enter the alarm evaluation period under Duration and duration.
* Change the name of the automatically generated alarm.
* Select Create.