Deeper into aws

Quick Review

Last time, we talked briefly about:

- We created an account
- EC2; we created instances (servers), stopped, and terminated (deleted them). Showed how to access them using SSH and an SSH key.
- IAM; we talked about users and their secret credentials
- CLI Access; using the AWS CLI to perform operations on AWS
- SDK Access; using a programming language to perform operations on AWS

Today

- S3
- Lambda
- CloudWatch

S3

Short for Simple Storage Service

- Storing files (called objects) in the cloud with relatively cheap pricing.
- You pay based on the size of your files (at-rest and in-transit) and per operation (PUT, GET, …)
- Different storage classes based on Access Frequency

S3

- Objects are stored in buckets and are identified by keys in the bucket
- Bucket names are Globally Unique on AWS
- Example:
  - s3://this-is-my-bucket/now/this/all/is/called/a/key.whatever
  - This is equal to:
    - Bucket=this-is-my-bucket
    - Key=now/this/all/is/called/a/key.whatever
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Lambda

Function-as-a-Service

- You provide code/binaries, then AWS can execute it for you at anytime you want.

Lambda

How can I call the code or binary I uploaded?

- Manually using “invoke” from the CLI or an SDK.
- Through an API (e.g. a REST API)
- Through an Event; something like a new server being created or a file being uploaded to S3
- On a schedule; for example, everyday at midnight, or every monday and thursday on 3AM.

It integrates with a lot of services on AWS; EC2, API Gateway, SNS, SQS, EventBridge, …

Lambda

Things to pay attention to:

- Permissions; resource-based access policy and IAM Role
- Timeout and Memory
- If you are just putting code (python & node), beware of handling the libraries that are not installed (you can use Lambda Layers to do so)

Lambda

Runtimes supported

- Python
- Node
- Go
- .NET Core 3.1
- .NET Framework 6
- Docker Images

CloudWatch

A service to facilitate:

- AWS Services Logging (e.g. Lambda spits logs/prints to CW)
- Metrics (e.g. CPU Utilization, Number of Requests, Network Bytes In/Out, …)
- Alarms (e.g. Send an email when you a server has a CPU utilization > 80%)
- Event Triggering; can be connected to lambda to do ANYTHING when an event happens, for example, an new EC2 instance is provisioned/created, or a new user is created
- Collecting logs from Servers and many more