CS 470 Project Two Conference Presentation: Cloud Development

https://youtu.be/gu1FK84rf9g

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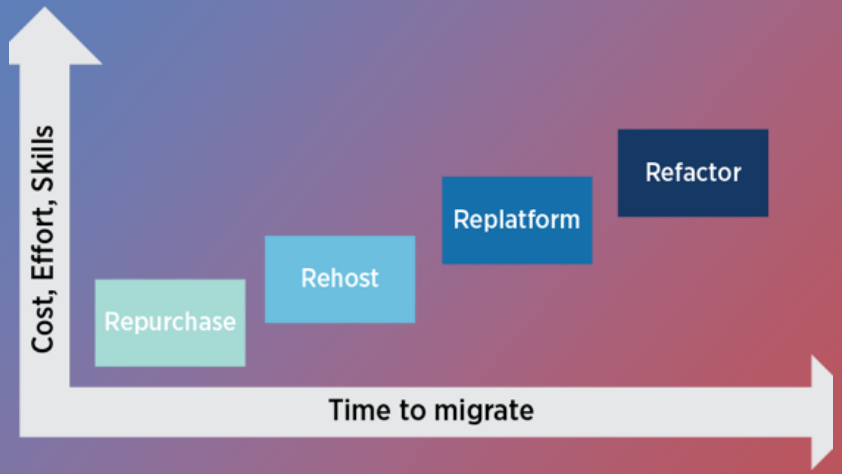
Overview

- Alabama
- 21 years old
- Graduation Computer Science Major

Goal:

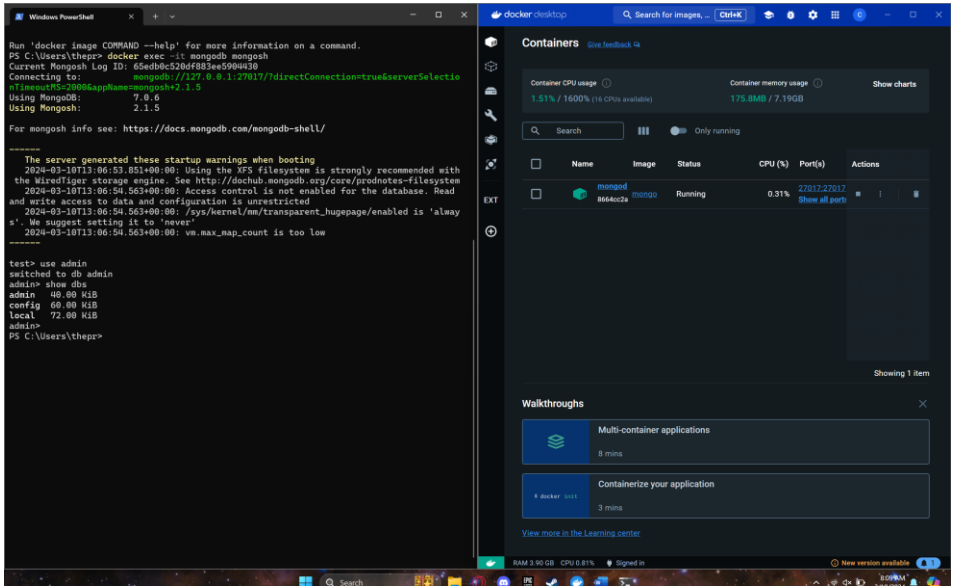
Articulate the intricacies of cloud development to both technical and nontechnical audiences.



Containerization

- Rehost
- Replatform
- Refactor

Orchestration



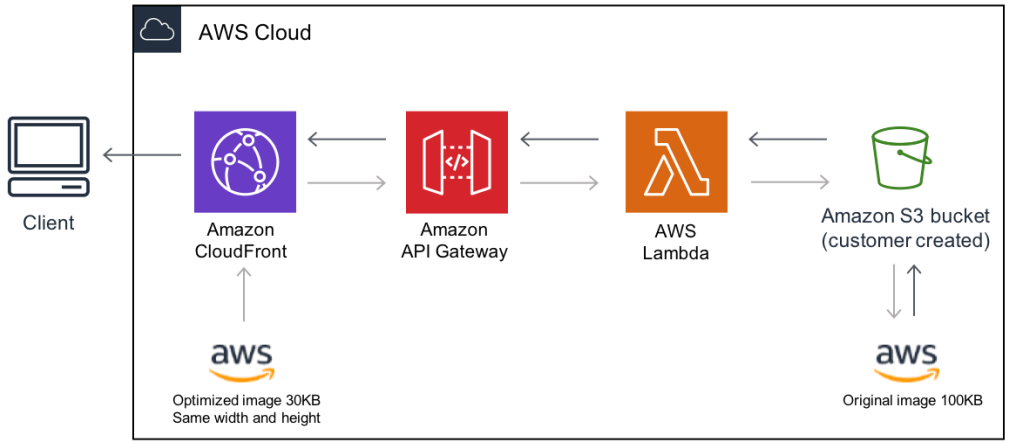
Docker makes it easy

- Fast instantiation
- Dependency tracking
- Environmental variable standardization

The Serverless Cloud

Serverless

- What is “serverless” and what are its advantages?
- What is S3 storage and how does it compare to local storage?

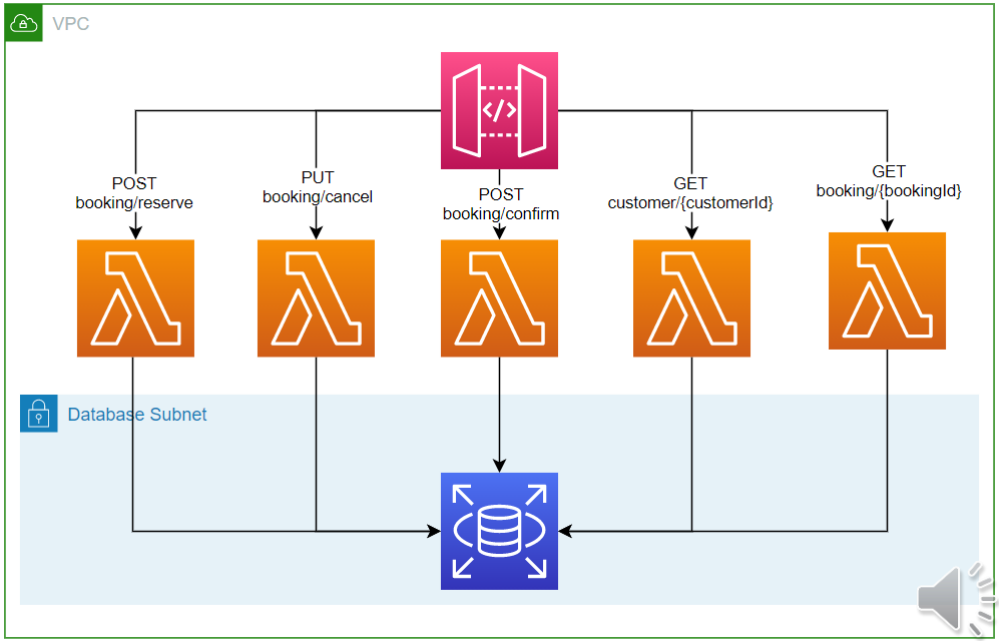


The Serverless Cloud

API & Lambda

Why use a serverless API?

- Horizontal Scalability
- Easy trouble shooting
- Simplified development
- Instant code deployment



The Serverless Cloud

Mongo

Document-Oriented

Dynamo

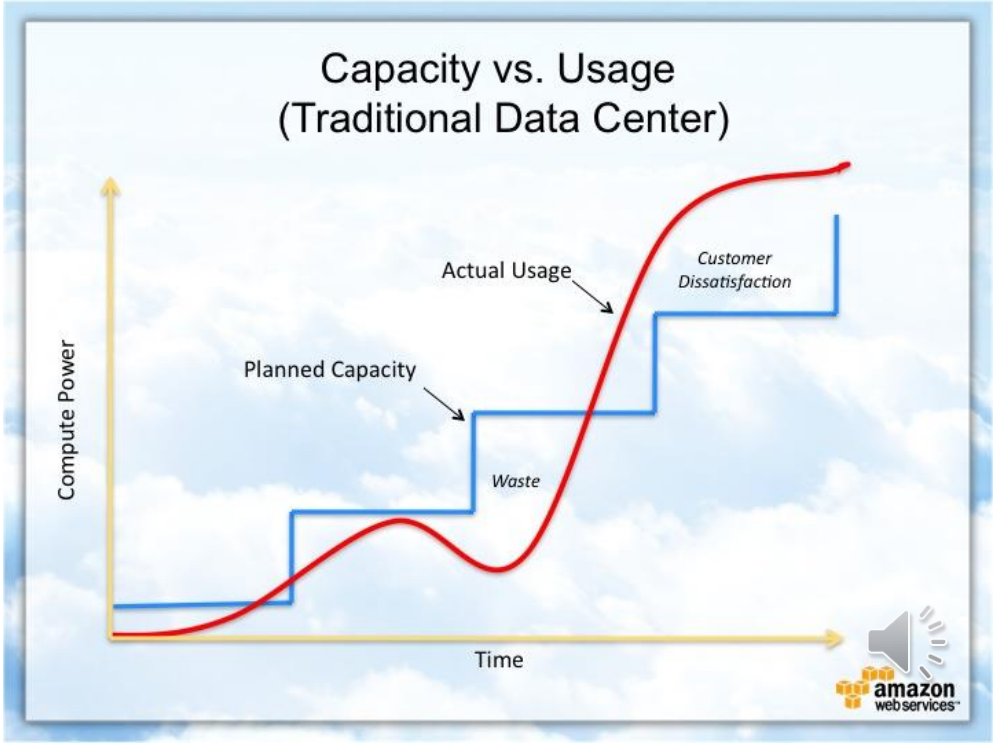
Key-Value Oriented

```
/*****************************************************************
 *  Scan table for all results matching filter
 *****************************************************************/

import { DynamoDBClient } from '@aws-sdk/client-dynamodb';
import { DynamoDBDocument, GetCommand, PutCommand, DeleteCommand, QueryComma

const dynamoDbClient = new DynamoDBClient();
const docClient = DynamoDBDocument.from(dynamoDbClient);

const responseHeaders = {
  // HTTP headers to pass back to the client
  "Content-Type": "application/json",
  // the next headers support CORS
  "X-Requested-With": "*",
  "Access-Control-Allow-Headers":
    "'Content-Type,X-Amz-Date,Authorization,X-Api-Key,x-requested-with",
  "Access-Control-Allow-Origin": "*",
  "Access-Control-Allow-Methods": "OPTIONS,*",
  // for proxies
  Vary: "Origin",
  // the "has-cors" library used by the Angular application wants this set
  "Access-Control-Allow-Credentials": "true",
};

async function queryDatabase(tableName, includeClause, whereClause) {
  // create the query params
  const paramQuery = async () => {
    // define our query
    let params = {
      TableName: tableName,
    };

    if (whereClause) {
      // get the key and value
      let whereKey = Object.keys(whereClause)[0];
      let whereValue = whereClause[whereKey];

      //  set our values
      params.ExpressionAttributeNames = { "#whereKey": whereKey };
      params.ExpressionAttributeValues = { ":whereValue": whereValue };
      params.FilterExpression = "#whereKey = :whereValue";
    }
```

Table Scan Query for Dynamo

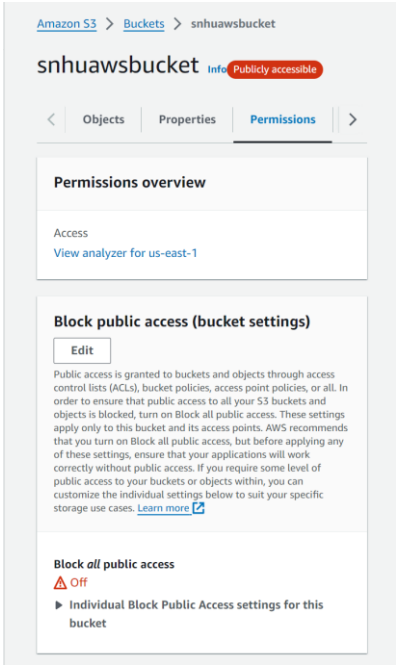
Cloud-Based Development Principles

- Elasticity
- Pay-for-use model

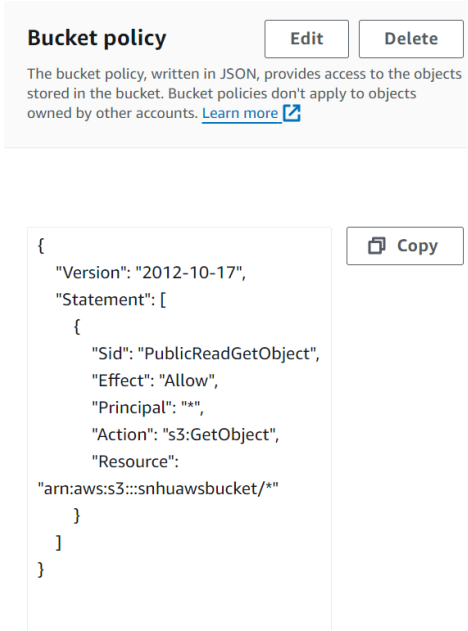


Securing Your Cloud App

Access



Policies



API Security

- How can you secure the connection between Lambda and Gateway?
- Lambda and the database
- S3 Bucket

CONCLUSION

- Cloud development introduces unparalleled scalability
- Cloud development allows for a plug and play environment for an application
- Cloud development can reduce hard coding time drastically.

Thank you for your time.