

AWS re/Start Portfolio Project

Project Section 1:

Each group will prepare an AWS Services Presentation. Groups are to decide their group name. The presentation will be towards a fictional or an actual cafe that:

1. Has not migrated to the Cloud
2. Is using the hybrid model – i.e. On premises and Cloud Infrastructure
3. Utilizing another Cloud Platform

Learners are then present to a panel of their choice, about the services, pricing, and benefits of moving to AWS.

Project Section 2:

Learners are required to create a static Amazon S3 website of the above café of their choosing. Website must include:

- ❖ Café name
- ❖ Minimum of 5 items on the menu
- ❖ Description of the business
- ❖ Contact information

Groups:

Group 1:	Group 2:	Group 3:	Group 4:	Group 5:

Problem Statement for FreshlyGround Cafe's Cloud Migration

FreshlyGround, a beloved local cafe, faces operational challenges due to outdated on-premises systems. The lack of a robust online presence hinders its ability to attract and retain customers in today's digital landscape.

Objective: To overcome these challenges, FreshlyGround aims to migrate its IT infrastructure to the cloud. The primary goals are to enhance operational efficiency, improve customer engagement, and provide a seamless experience for patrons.

Proposed Solution:

4. Cloud Infrastructure Migration:

- FreshlyGround plans to migrate its IT systems to a reliable cloud service provider, specifically Amazon Web Services (AWS).

5. Online Presence Enhancement:

- The cafe will develop a cloud-hosted website to bolster its online presence. This website will allow customers to view the menu and prices conveniently.

Key Services:

❖ Amazon S3 (Simple Storage Service):

○ Benefits:

- Highly Scalable: Amazon S3 can handle varying data volumes, from gigabytes to petabytes, without compromising performance.
- Reliable: Designed for 99.999999999% durability and 99.99% availability, ensuring data safety and accessibility.
- Secure: Robust security features, including encryption at rest and in transit, access control policies, and integration with AWS Identity and Access Management (IAM).

○ Features:

- Easy Integration: Seamlessly integrates with other AWS services.
- Cost-Effective: Provides cost savings compared to traditional hosting.
- Custom Domain Support: Allows custom domain names for branding.

❖ Static Website Hosting:

- Freshly Ground can directly host static websites from an S3 bucket. This cost-effective approach serves static content (HTML, CSS, JavaScript, and images) without requiring a separate web server.

Certainly! Let's design an AWS architecture for Freshly Ground Cafe's cloud migration. I'll create a high-level architecture that incorporates the specified services:



FreshlyGround Cafe's AWS Cloud Architecture

1. Compute Services

Amazon EC2 (Elastic Compute Cloud)

- ❖ **Purpose:**
 - Host Freshly Ground's applications, web servers, and databases.
 - Provide scalable compute capacity.
- ❖ **Implementation:**
 - Create EC2 instances for different application components (e.g., menu management, order processing).
 - Use Auto Scaling to handle varying workloads.

AWS Lambda

- ❖ **Purpose:**
 - Execute serverless functions in response to events (e.g., new orders, website visits).
- ❖ **Implementation:**
 - Refactor monolithic code into Lambda functions.
 - Trigger functions based on events (e.g., S3 uploads, API Gateway requests).

2. Storage Services

Amazon S3 (Simple Storage Service)

- ❖ **Purpose:**
 - Store static content (HTML, CSS, images) for the cafe's website.
 - Host the website directly from S3 buckets.
- ❖ **Implementation:**
 - Create S3 buckets for website assets.
 - Enable static website hosting.

Amazon EBS (Elastic Block Store)

- ❖ **Purpose:**
 - Provide block-level storage volumes for EC2 instances.
 - Store data persistently.

❖ **Implementation:**

- Attach EBS volumes to EC2 instances (e.g., for database storage).
- Migrate existing databases by attaching EBS volumes to RDS instances.

3. Database Services

Amazon RDS (Relational Database Service)

❖ **Purpose:**

- Host relational databases (e.g., menu items, customer orders).

❖ **Implementation:**

- Migrate on-premises databases to RDS instances.
- Use Multi-AZ for high availability.

Amazon DynamoDB

❖ **Purpose:**

- Store NoSQL data (e.g., customer profiles, preferences).

❖ **Implementation:**

- Refactor applications to use DynamoDB.
- Migrate existing NoSQL databases to DynamoDB.

4. Security Services

AWS IAM (Identity and Access Management)

❖ **Purpose:**

- Control access to AWS resources.
- Set up roles and policies for EC2 instances and Lambda functions.

Amazon Cognito

❖ **Purpose:**

- Provide user authentication and management.

❖ **Implementation:**

- Integrate Cognito to secure user authentication.
- Migrate user data to Cognito user pools.

5. Migration Services

AWS Database Migration Service (DMS)

❖ Purpose:

- Replicate data from on-premises databases to RDS or DynamoDB.
- Perform schema conversion if needed.

AWS Server Migration Service (SMS)

❖ Purpose:

- Migrate VMs from on-premises to EC2 instances.
- Replicate and launch VMs in AWS.

Remember that this is a high-level architecture. Detailed implementation will depend on FreshlyGround's specific requirements, workload, and security considerations. Feel free to customize and expand upon this architecture as needed! 😊

Certainly! Let's estimate the cost for FreshlyGround Cafe's AWS architecture based on the services we've discussed. Keep in mind that actual costs may vary based on usage, region, and specific configurations. I recommend using the [AWS Pricing Calculator](#) to get a more accurate estimate tailored to your specific needs.

Here's a high-level breakdown of the estimated costs for each service:

6. Compute Services:

- **Amazon EC2 (Elastic Compute Cloud):**
 - Costs depend on the instance type (e.g., t2.micro, m5.large) and usage hours.
 - Consider using reserved instances for cost savings.
- **AWS Lambda:**
 - Billed based on the number of requests and execution time (duration).
 - Typically cost-effective for event-driven workloads.

7. Storage Services:

- **Amazon S3 (Simple Storage Service):**
 - Costs depend on storage size, data transfer, and request rates.
 - S3 Standard storage is suitable for static content hosting.
- **Amazon EBS (Elastic Block Store):**
 - Costs vary based on volume type (SSD, HDD) and storage size.
 - Snapshots incur additional charges.

8. Database Services:

- **Amazon RDS (Relational Database Service):**
 - Charged based on the database instance type, storage, and data transfer.
 - Includes on-demand and reserved instances.
- **Amazon DynamoDB:**
 - Costs based on provisioned read/write capacity and storage.

9. Security Services:

- **AWS IAM (Identity and Access Management):**
 - No direct cost; included with AWS account.
- **Amazon Cognito:**
 - Costs depend on monthly active users (MAUs) and data storage.

10. Migration Services:

- **AWS Database Migration Service (DMS):**
 - No additional cost for DMS itself, but consider EC2 instance costs for replication.
- **AWS Server Migration Service (SMS):**
 - No direct cost for SMS; consider EC2 instance costs for migrated VMs.

Remember to configure the details (e.g., instance types, storage sizes, usage patterns) in the [AWS Pricing Calculator](#) to get a precise estimate. Feel free to explore different scenarios and adjust parameters as needed. 😊