

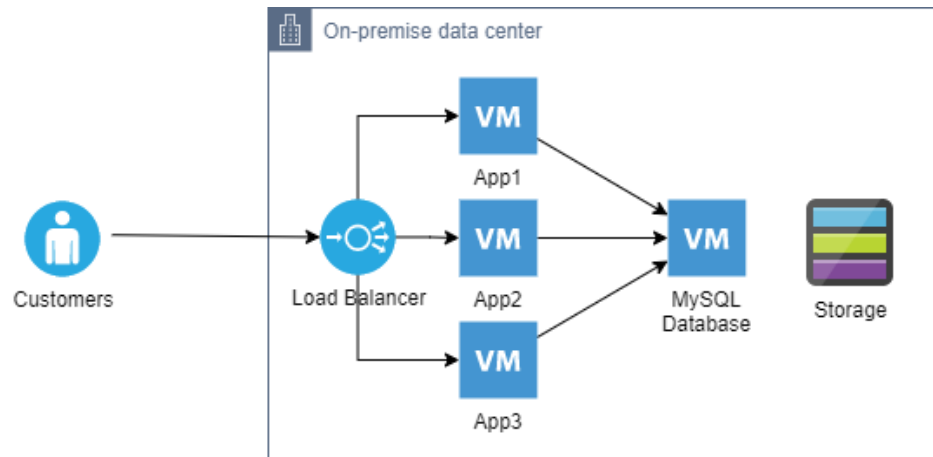
## Amazon AWS I – Cloud Practitioner

---

### Use Case Study

*My Healthy Eating Inc.*, a Toronto-based company, sells healthy food online to customers across North America. The company builds and maintains its own e-Commerce website. Over the last few years, the company has experienced rapid growth due to the increasing popularity of their products. Meanwhile, their IT operational cost has also gone up significantly.

Below is a diagram of the company's on-premise data center environment, which is a typical three-tier application, including a load balancer, three application servers running the e-Commerce application, and a MySQL database server. In addition, the company has a total of approximately 2 TB data stored in the data center.



As an AWS certified cloud practitioner, you decide to write a report to the IT manager suggesting the company to migrate its on-premise data center to AWS. In the report, you need to discuss the cloud benefits, identify the AWS services to use and high-level cost estimation, and outline a brief migration plan.

Write your report below:

---

# Report to IT Manager: Migrating On-Premises Data Center to AWS

## Introduction

This report outlines the benefits of migrating My Healthy Eating Inc.'s on-premises data center to Amazon Web Services (AWS). It identifies relevant AWS services, provides a high-level cost estimation, and outlines a brief migration plan. The goal is to enhance operational efficiency, reduce costs, and improve scalability and security.

## Cloud Benefits

1. **Cost Efficiency:** AWS offers a pay-as-you-go pricing model, eliminating the need for large upfront investments (capital expenditures) in hardware. This can help reduce operational costs, particularly for scaling resources up or down based on demand.
2. **Scalability:** With AWS, My Healthy Eating Inc will be able to scale automatically based on demand and AWS provides virtually unlimited capacity. Services can be scaled automatically to meet the demands of the growing customer base without downtime.
3. **Reliability:** AWS's global infrastructure ensures high availability and disaster recovery. Data is replicated across multiple data centers, ensuring continuity and minimizing downtime. This helps improve the customer experience when they engage with the web application and services.
4. **Security:** AWS offers robust security measures, which includes data encryption (at rest and in transit), compliance certifications, and security monitoring. This ensures that customer data is protected according to industry standards.
5. **Innovation:** AWS offers a vast array of services which enables rapid deployment of new features and applications, fostering innovation and keeping the company competitive.

## Amazon AWS I – Cloud Practitioner

---

### AWS Services to Use

1. **Amazon EC2:** EC2 instances will replace the on-premises application servers. This will significantly improve scalability, reliability and availability of computing power.
2. **Amazon RDS (Relational Database Service):** To manage the MySQL database with high availability and scalability.
3. **Amazon S3:** For secure, durable, and scalable object storage, suitable for storing the company's 2 TB of data.
4. **Amazon CloudFront:** To foster content delivery network, ensuring customers and users enjoy fast and secure access to the e-commerce website across North America.
5. **AWS Elastic Load Balancing (ELB):** To distribute incoming traffic across multiple EC2 instances, efficiently manage workload and ensure high availability and reliability.
6. **AWS IAM (Identity and Access Management):** To manage access to AWS services and resources securely. Also, helps enhance security and reduces the impact of data loss.
7. **AWS Storage Gateway:** For centralized backup management and automation, ensuring data is backed up and easily recoverable.

### High-Level Cost Estimation

**Amazon EC2:** Assuming the use of three t3.medium instances for the application servers and, the estimated monthly cost would be approximately 45.11 USD.

**Amazon RDS for Db2:** One db.t3.medium instance for MySQL with 100 GB storage, vCPU: 2 and memory 4:GiB would cost around 110.45 USD per month.

**Amazon S3:** Storing 2 TB of data would cost approximately 47.10 USD per month.

**Amazon CloudFront:** Data transfer out to internet first 1,024 GB/month is free. Data transfer out to origin first 1,024 GB/month is free as well. **1000 GB/month both ways** costs are estimated at around 105 USD per month, depending on usage.

**AWS Elastic Load Balancing:** Recommendation 1 Network Load Balancer to help improve the distribution of traffic on the network and 3 Application load balancer for each application to help distribute the workload of computing power.

- 3 Application load balancer estimated at 66.79 USD per month with 1 GB/hour of processed bytes (EC2 instances and IP addresses as target).
- 1 Network load balancer estimated at 29.57 USD per month. Breakdown:
  - o Processed bytes per NLB for TCP 1 GB/hour
  - o UDP traffic 1 GB/hour

## Amazon AWS I – Cloud Practitioner

- TLS traffic 1 GB/hour

**AWS IAM Access Analyzer:** 6 USD per month

**AWS Storage Gateway:** to transfer data 2 TB / month 1 USD

**Total Estimated Monthly Cost: \$411.02 USD**

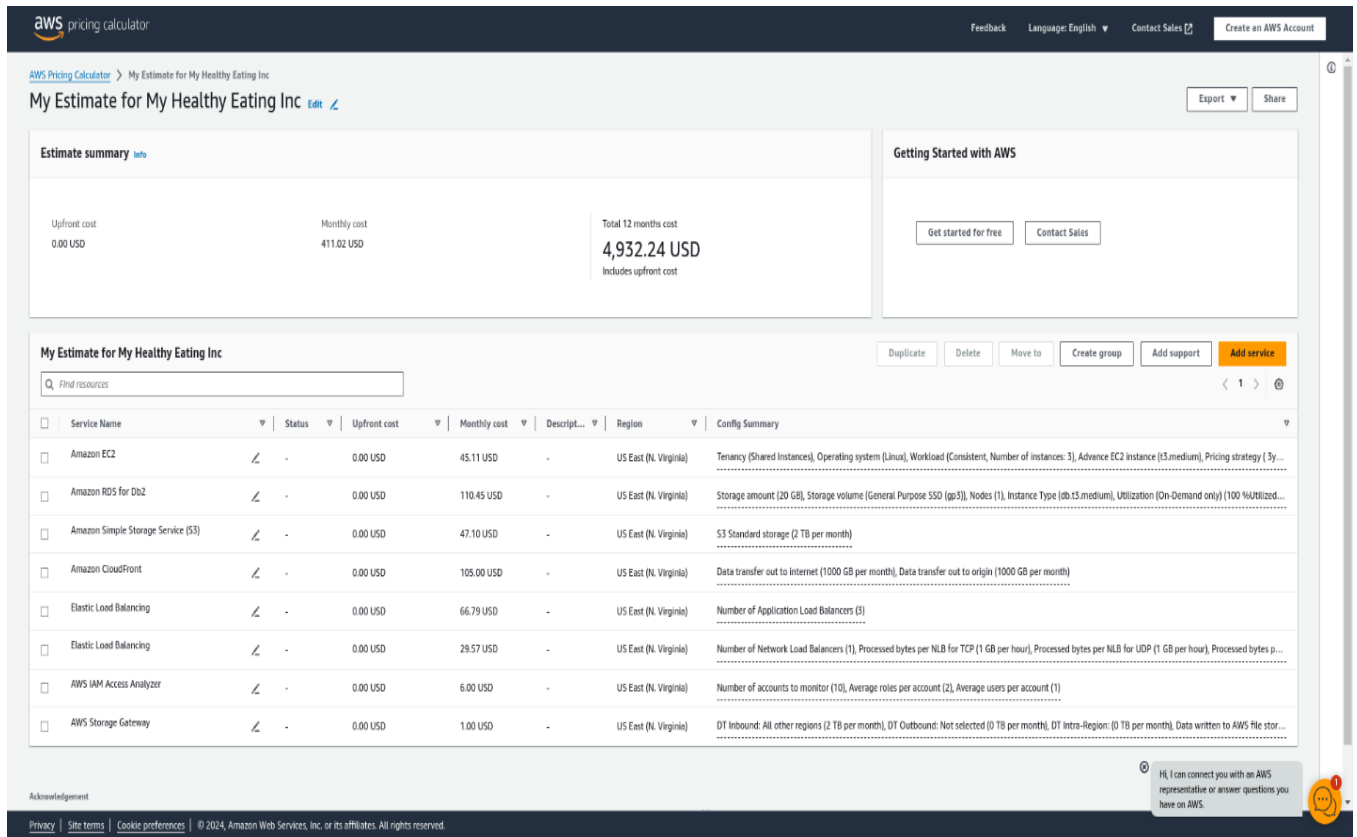


Figure 1: Screenshot of estimate for My Healthy Eating Inc on AWS cloud.

### Brief Migration Plan

1. **Assessment:** Evaluate the current on-premises environment, including application dependencies, data volume, and network requirements. Know your assets.
2. **Planning:** Consider various migration plans and develop a detailed migration plan, including timelines, resource allocation, and risk mitigation strategies. At this stage, I would recommend a lift and shift migration plan.

## Amazon AWS I – Cloud Practitioner

---

3. **Set Up AWS Environment:** Configure the AWS environment, including VPC, EC2 instances, RDS, S3, IAM, and other necessary services.
4. **Data Migration:** Transfer the 2 TB of data to Amazon S3 using AWS DataSync or AWS Snowball for large data transfers.
5. **Application Migration:** Move the e-commerce application to EC2 instances, configure ELB, and set up CloudFront for content delivery.
6. **Database Migration:** Migrate the MySQL database to Amazon RDS using AWS Database Migration Service (DMS).
7. **Testing:** Perform thorough testing to ensure that all applications and services function correctly in the new environment.
8. **Tradeoff/Cutover:** Switch the live traffic to the AWS environment. Monitor the performance and address any issues that arise.
9. **Optimization:** Continuously monitor and optimize the AWS environment for cost and performance.

### Conclusion

Migrating My Healthy Eating Inc.'s on-premises data center to AWS offers significant benefits, including cost efficiency, scalability, reliability, and security. By leveraging AWS services, the company can support its rapid growth and ensure a robust, future-proof IT infrastructure. The proposed migration plan provides a structured approach to transition smoothly and minimize risks.

Prepared by: Jennifer Mbaegbu

AWS Certified Cloud Practitioner