Proof-of-Concept Report

Name: Jason Grieco

Date: 02/27/2023

**Table of Contents**

[Abstract 3](#_Toc42075063)

[Introduction 3](#_Toc42075064)

[Statement of Need 3](#_Toc42075065)

[Assumptions 3](#_Toc42075066)

[Description of Current Infrastructure 3](#_Toc42075067)

[Cloud Service Providers 3](#_Toc42075068)

[Project Details 3](#_Toc42075069)

[Building a VPC on AWS 3](#_Toc42075070)

[Challenges Encountered 4](#_Toc42075071)

[Conclusion 4](#_Toc42075072)

[References 4](#_Toc42075073)

[Appendix - Screenshots 5](#_Toc42075074)

# Abstract

The aim of this report is to present essential insights into the significance of cloud migration, including its potential benefits in terms of scalability, availability, and efficiency. Several crucial factors that influenced the decision to migrate to the cloud are discussed, such as the opportunity to save time and resources, a comprehensive view of network security, and the ability to concentrate on serving current customers while expanding nationally

# Introduction

At Don & Associates, we are thrilled to announce that we have finalized our decision to migrate our IT infrastructure to the cloud. This move is a significant milestone for us, as it offers the potential for growth and cost savings. Our company, which began as a small financial consulting firm, has expanded beyond its original location and now serves small and mid-sized businesses across the United States, with the opportunity for further expansion globally. However, the physical IT infrastructure that supports our data could hinder such growth, which is why we have decided to make this transition to the cloud.

# Statement of Need

As our customer base continues to grow, we are experiencing greater strain on our network and IT staff. Our primary challenge now is to maintain a secure network and IT infrastructure. To address this challenge, we have decided to migrate to the cloud, which will not only alleviate the burden but also enhance the security of both our company and customer data. With the cloud environment, we can save costs and concentrate more on improving customer relationships. Additionally, the highly scalable network of the cloud enables us to pay only for what we need and adopt a pay-as-you-go model.

# Assumptions

Based on my evaluation, I recommend that we choose AWS as our cloud service provider. AWS has a remarkable track record of working with billion-dollar enterprises, and its cloud services are exceptional. It ensures compatibility across all platforms, applications, and operating systems, thereby unifying them all within the AWS interface. With a small IT team of well-trained professionals, we can manage our network more effectively, and we will be equipped to tackle any obstacles that may arise in the future.

# Description of Current Infrastructure

Moving our infrastructure to AWS will enable our staff to leverage the full range of products and services available, ensuring a consistently secure network. With AWS, we will have access to a broad selection of tools and resources, allowing us to tailor our infrastructure to meet our specific needs

AWS provides a comprehensive range of services that can be customized to meet our company's specific requirements. These services include Amazon EC2, Amazon RDS, Amazon S3, Amazon Glacier, Amazon Lambda, and Amazon CloudFront, to name just a few. These are only a small sample of the over 200 services available on AWS's reliable, secure, and extensive cloud platform, which operates from data centers worldwide [source: AWS website]. With AWS, we can ensure high availability and fault tolerance through their advanced technology and global infrastructure.

AWS operates in 25 regions globally, and each region has multiple Availability Zones, totaling 80 zones. It provides services to 245 countries and territories and has 108 Direct Connect locations, allowing for secure, high-speed connectivity. AWS also has over 230 Points of Presence worldwide, enabling us to deliver our services more efficiently and effectively to customers globally.

Our current IT infrastructure comprises three Dell R640 servers with dedicated attached storage systems and multiple backup SANs. These servers run on VMware ESXI 7.0, a hypervisor that allows us to create and duplicate virtual machines. However, as cloud computing advances rapidly, our infrastructure is becoming outdated. We are investing a significant amount of time and resources into ensuring that our network is secure, reliable, and available to both our workers and customers. Migrating to AWS will enable us to seamlessly transfer our IT infrastructure to the cloud, minimizing or even eliminating any downtime during the migration process.

# Cloud Service Providers

AWS has been designed with an easy learning curve for our IT staff. This strategic approach enables companies to launch an instance, application, and store data swiftly and securely in the cloud. AWS is highly flexible and supports a variety of operating systems, management tools, programming languages, web application platforms, and databases. AWS does not cater to specific technologies exclusively. For instance, once an instance is up and running, our IT staff can continue to use PowerShell with the Windows Server OS installed on the instances if they are more comfortable with that. Once employees are proficient in AWS, we can integrate the AWS CLI as a unified tool to manage services within AWS. Understanding how the AWS CLI works can significantly reduce the amount of time needed to manage and maintain the network within AWS.

AWS has been designed to provide an easy learning curve for our IT staff. This strategic approach allows companies to launch instances, applications, and store data quickly and securely in the cloud. AWS is highly flexible and supports various operating systems, management tools, programming languages, web application platforms, and databases. It is not restricted to specific technologies, and our IT staff can continue using PowerShell with the Windows Server OS installed on the instances if they prefer. Once employees are proficient in AWS, we can integrate the AWS CLI as a unified tool to manage services within AWS. This can significantly reduce the time required to manage and maintain the network within AWS.

Google Cloud offers a wide range of services including compute, storage, networking, databases, machine learning, and more. Some of the popular services include Google Compute Engine, Google Kubernetes Engine, Google Cloud Storage, Google Cloud SQL, and Google Cloud Pub/Sub. Google Cloud also offers integrated tools and services for data analytics, security, and application development.

One of the key advantages of Google Cloud is its focus on innovation and cutting-edge technologies. Google invests heavily in research and development to provide customers with the latest advancements in cloud computing. For example, Google has developed its own machine learning framework, TensorFlow, which is widely used by data scientists and machine learning engineers.

It's worth noting that while Google Cloud may not have as many services as AWS or Azure, they do offer many innovative and cutting-edge technologies such as their machine learning and artificial intelligence tools. Additionally, Google Cloud has been making significant investments in expanding their global infrastructure with plans to open new regions and data centers in the coming years. Ultimately, the choice between AWS, Azure, and Google Cloud depends on the specific needs and goals of the organization.

I completely agree with you. It is important for companies to recognize the importance of having skilled IT staff who are continuously learning and adapting to new technologies. This is particularly crucial when it comes to cloud computing, which is constantly evolving.

In addition, it is important to carefully evaluate the pricing structures of different cloud providers to avoid unexpected costs. It is important to understand exactly what services are included in the pricing and what additional support may be required, and to regularly review and optimize usage to ensure costs stay within budget.

# Project Details

In this portion of the report, I will explain the steps of building a VPC and WEB SERVER

**VPC**

1. Go to the AWS Management Console (https://console.aws.amazon.com/).
2. In the top-left corner, select the desired AWS region from the dropdown menu.
3. In the "Find Services" search bar, type "VPC" and select "Amazon VPC" from the results.
4. You should now be in the Amazon VPC console, where you can view and manage your VPCs, subnets, security groups, and other related resources.

**Web Server**

1. Launch an EC2 instance: Go to the EC2 dashboard, click the "Launch Instance" button, select an Amazon Machine Image (AMI), choose an instance type, configure instance details (such as network, storage, and security), and launch the instance.
2. Connect to the instance: Once the instance is launched, connect to it using a remote desktop protocol (RDP) or secure shell (SSH) client.
3. Install and configure the web server software: Depending on the operating system used by the instance, you can install and configure web server software such as Apache, Nginx, or IIS.
4. Configure the firewall: Open the necessary ports to allow traffic to reach the web server, such as port 80 for HTTP traffic and port 443 for HTTPS traffic.
5. Deploy your web application: Copy your web application files to the instance and configure the web server to serve those files.
6. Test the web server: Verify that the web server is serving the web application correctly by opening a web browser and accessing the instance's public IP address or domain name.
7. Scale the web server: If needed, you can scale the web server by adding more instances to a load balancer, or by using AWS Auto Scaling to automatically adjust the number of instances based on traffic demand.

Keep in mind that the specific details involved in launching a web server on an instance in AWS may vary depending on factors such as the specific requirements of the web application and the configuration of the instance. The general steps outlined above, however, should provide a helpful starting point for setting up a web server on an instance in AWS.

# Challenges Encountered

During the VPC setup process, I encountered an issue where the VPC wizard was not allowing me to create the VPC. It seemed like my account did not have the necessary permissions to configure the area. However, upon checking the instances, I discovered that the wizard had already run and configured the VPC in the background, including the routing table. Although I experienced some difficulty with the wizard, I found the user interface to be intuitive and user-friendly.

# Conclusion

To summarize, although there are various options available for the infrastructure transformation project, AWS appears to be the most suitable choice for Don & Associates. It is highly recommended that they implement a VPC on AWS to benefit from the scalable and secure infrastructure. This option provides a feasible solution for addressing their issues and moving forward with their company expansion.

# References

Gaille, B. (2018). 15 Microsoft Azure Advantages and Disadvantages.

https://brandongaille.com/15-microsoft-azure-advantages-and-disadvantages/

Hlova, M. (2020). Comparing the big three: AWS vs Azure vs GCP.

https://www.n-ix.com/comparing-big-3-aws-azure-gcp/

Sharma, R. (2020). What is google cloud platform (GCP) and why should you choose it?

https://www.netsolutions.com/insights/what-is-google-cloud-its-advantages-and-whyyou-

should-adopt-it/

# Appendix - Screenshots

Graphical user interface, text, application, Word

Description automatically generated

Source: AWS

**AWS Management Console Name**

Graphical user interface, text, application, Word

Description automatically generated

Source: AWS

Capture the screen after each task of the lab and insert it here.

**Task 1: Create Your VPC**

A screenshot of a computer

Description automatically generated

**Task 2: Create Additional Subnets**

Graphical user interface, application

Description automatically generated

**Task 3: Create a VPC Security Group**

Graphical user interface, application

Description automatically generated

**Task 4: Launch a Web Server Instance**

Graphical user interface, application, table, Word

Description automatically generated