Proof-of-Concept Report

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Don & Associates

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Abstract

Don & Associates is a financial consulting company that provides services to small and medium-sized companies. They are currently looking into expanding into surrounding states in the North-East region of the United States. To cut costs and ensure a more effective expansion, they are considering using a cloud service to provide new IT infrastructure. After researching three of the largest cloud service providers (Amazon Web Services, Microsoft Azure, and Google Cloud Platform), I recommend that Don & Associates use Amazon Web Services to expand.

Introduction

Don & Associates is a financial consulting company that provides services to small and medium-sized companies. Due to recent successes and increased demand, they are planning to expand across more states in the North-Eastern Region of the United States. They are looking into alternatives to buying new hardware for their new locations for a smoother and more cost-effective expansion.

Statement of Need

With Don & Associates expanding to other states in the region, there is a need to develop new resources. A successful expansion requires new sites to access resources and communicate with available assets at the primary office. Development can be costly if new sites buy and install new physical hardware like servers, other network devices, maintenance, and labor. Migrating to the cloud allows Don & Associates to eliminate certain expansion costs, including purchasing hardware for each new site, hiring technicians to maintain the hardware, and any overhead costs required for upkeep (Milano, 2013), while also allowing for centralized management of data.

Assumptions

There are two main assumptions made during the process of setting up this VPC and Web Server. The first assumption is that Don & Associates has decided to use Amazon Web Services (AWS) as their cloud provider. Therefore, both the VPC and Web Server will be created using AWS as their foundation. The second assumption is that Don Associates will be using just a simple VPC and Web Server; the example used in this report is a basic VPC that uses default values and almost no customization. Without knowing the specific needs of Don & Associates, a default system will be used as an example.

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Description of Current Infrastructure

The current infrastructure of Don & Associates is entirely physical, including servers, networks, and other hardware.

Cloud Service Providers

There are three models of cloud computing that one should be aware of when deciding to incorporate the cloud, Infrastructure as a Service (IaaS), Software as a Service (SaaS), and Platform as a Service (PaaS) (Leading Edge, 2021). The most common model is IaaS which offers basic infrastructure such as servers, networks, and data storage, removing the need for hardware at the office, providing a cost-effective solution for IT needs. PaaS provides the infrastructure but focuses on application development. Finally, SaaS provides a service, usually on a subscription basis, managed from a remote location so that businesses do not have to concern themselves with maintaining the software or hardware. Don & Associates will be able to make the most use of IaaS since it fits the requirements for expansion into surrounding areas. There are three major cloud service providers that Don & Associates should consider, Amazon Web Service (AWS), Microsoft Azure, and Google Cloud Platform (GCP).

Amazon Web Services was one of the first early adopters of cloud services (Veritis, 2021), has a large selection of services to choose from, including computing, databases, content delivery and storage, and networking, and is often used as a benchmark for quality cloud services. However, AWS has a reputation for downplaying hybrid cloud offerings (Carey, 2020), although they recently shifted from this ideology. In addition, the large number of services can be overwhelming for businesses just moving to the cloud but is managed easily with the AWS Console.

Another large provider is Azure. Azure uses the large Microsoft-managed datacenters to build, deploy, and manage their services (Veritis, 2021), including computing, networking, data management, and performance. If a company already uses Microsoft services like Windows Server, then using Azure will allow for a much easier transition and compatibility with current software across the company. Unfortunately, one of the most significant issues with Azure is that they are known to suffer from outages, leaving companies and services unavailable (Carey, 2020). In addition to the large outages, they have a reputation for having poor customer service (Google, 2021).

The last of the largest providers is GCP. GCP uses full-scale encryption of all data and communication channels and tends to have a more user-friendly interface, lower costs, and flexible options (Veritis, 2021). GCP is most prominent in machine learning, cloud-native applications, and other optimized applications for use with a cloud service. However, when it comes to enterprise uses, GCP falls short compared to the other two providers. GCP has an immature enterprise focus, which shows during contract negotiations, discounts, independent

software, and support (Carey, 2020). Although GCP has shown improvement in this area, it is still one of their most significant weaknesses.

Project Details

The following step-by-step instructions will allow Don & Associates to create a basic VPC and then launch a basic web server using default settings (Vocareum, 2021). After the IT technicians practice with the basic VPC and Web Servers, and get used to the AWS Management Console, they can begin to customize it to the needs of Don & Associates.

Building a VPC on AWS

- First, make sure to log on to your AWS Management Console.
- Click "VPC" under the "Services" menu
- Click on the orange "Launch VPC Wizard" option
- Select "VPC with Public and Private Subnets"
- Press the blue "Select" button.
- Configure your VPC name, availability zone, public subnet name, availability zone, private subnet name, and your Elastic IP Allocation ID
- Click the blue "Create VPC" button and then the blue "Ok" button.
- Next, create any additional subnets.
- On the left navigation panel, select "Subnets."
- Configure any additional private or public subnets you want.
- Next, you will configure a route table so your private subnets can access the internet while still being private.
- On the navigation panel, click "Route Table."
- Click on the route with "Main=Yes" and "VPC='VPC Name'."
- Note that **Destination 0.0.0.0/0** is set to **Target nat-xxxxxxxx**. This means that traffic destined for the internet (0.0.0.0/0) will be sent to the NAT Gateway. The NAT Gateway will then forward the traffic to the internet.
- Name your route table and press the orange "Save" button.
- In the lower panel, click the "Subnet Associations" tab.
- Click "Edit subnet associations" and select any private subnets.
- Click the orange "Save associations" button.
- Repeat with the public subnets, but the route will be "Main=No" and "VPC='VPC Name'" with all other subnets not selected
- Note that **Destination 0.0.0.0/0** is set to **Target igw-xxxxxxxx**, which is the Internet Gateway. This means that internet-bound traffic will be sent straight to the internet via the Internet Gateway.
- Associate the route table with any public subnets you have.

- Now you will configure a security group. In the left navigation panel, select "Security Groups."
- Click on the orange "Create security group" button and configure the name, description, and VPC you are using.
- Click on the "Inbound Rules" panel and click "Add Rule" to configure any rules that you want to apply to the group.

Launching a Web Server on AWS
- Click on EC2 in the "Services" menu.
- Click on the orange "Launch Instance" button and select "Launch Instance."
- First, you will select an *Amazon Machine Image (AMI)*, which contains the desired Operating System.
- Select the Instance Type. The *Instance Type* defines the hardware resources assigned to the instance.
- Click on "Next: Configure Instance Details"
- Configure the Network, Subnet (public, not private), and Auto-assign Public IP.
- Click on "Next: Add Storage" use the default settings.
- Click on "Next: Add Tags," then click on "add tag" and configure the key and value.
- Click on "Next: Configure Security Group" and select the security group you created earlier.
- Click on "Review and Launch," then "Continue," and then "Launch."
- Select an existing keypair, check off the "I acknowledge" option, and press "Launch Instances."

Challenges Encountered

The greatest challenge I encountered was creating a VPC and Web Server without knowing the exact needs of Don & Associates. Although making a default VPC and Web Server is relatively easy, it is not until customization begins that issues start to appear and more troubleshooting is required. Additionally, without knowing the company's needs, it is difficult to provide the steps and resources necessary to give the client what they are asking for and provide a working prototype.

Conclusion

In conclusion, after researching three of the largest cloud service providers, I recommend that Don & Associates use Amazon Web Services (AWS) during their expansion. Although all three providers can make the expansion more manageable and cost-effective, AWS provides a fast,

secure platform that allows for significant customization and a user-friendly management console. AWS is also one of the first cloud computing providers, which has resulted in a reliable customer support service. Although Azure and GCP are great cloud service providers, they do not necessarily meet the needs of Don & Associates at this time. Overall, AWS will allow Don & Associates to have efficient and cost-effective expansion into the North-Eastern United States.
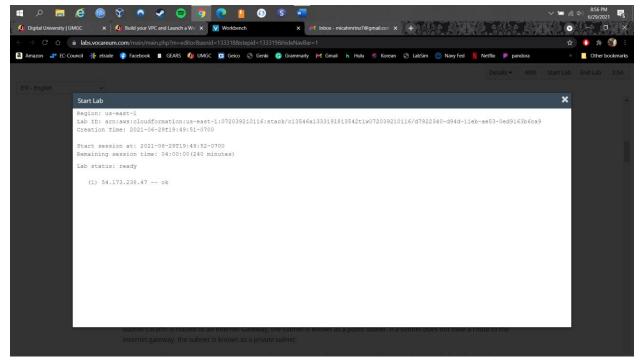
References

Carey, S. (2020, January 23). *AWS vs Azure vs Google Cloud: What's the best cloud platform for enterprise?* Retrieved from Computer World: https://www.computerworld.com/article/3429365/aws-vs-azure-vs-google-whats-the-best-cloud-platform-for-enterprise.html?page=2

Google. (2021, June 22). *Azure Customer Service Reddit Search Results*. Retrieved from Google: https://www.google.com/search?q=azure+customer+service+reddit&oq=azure+customer+service+reddit&aqs=chrome..69i57j33i22i29i30.9108j0j7&sourceid=chrome&ie=UTF-8

Leading Edge. (2021). *What are the Types of Cloud Computing?* Retrieved from Leading Edge: https://www.leadingedgetech.co.uk/it-services/it-consultancy-services/cloud-computing/what-are-the-types-of-cloud-computing/

Milano, S. (2013, April 2). *Business Plan Expansion Financial Analysis*. Retrieved from Chron: https://smallbusiness.chron.com/business-economic-financial-considerations-expanding-63898.html

Veritis. (2021, April 7). *AWS Vs Azure Vs GCP – The Cloud Platform of Your Choice?* Retrieved from Veritis: https://www.veritis.com/blog/aws-vs-azure-vs-gcp-the-cloud-platform-of-your-choice/#:~:text=AWS%20and%20Azure%20are%20offering,to%20gain%20maximum%20demand%20influx.

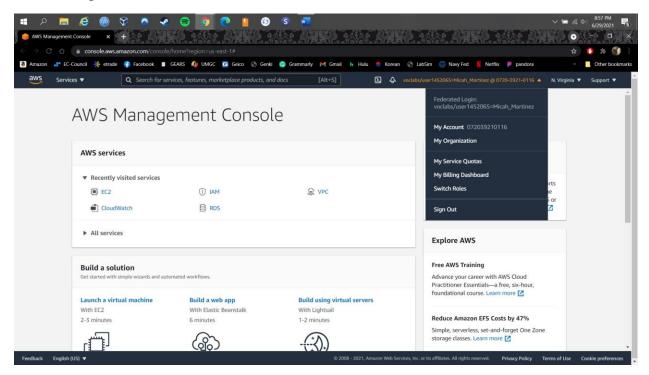Vocareum. (2021, June 29). *Lab 2: Build your VPC and Launch a Web Server*. Retrieved from Vocareum: https://labs.vocareum.com/main/main.php?m=editor&asnid=133318&stepid=133319&hideNavBar=1
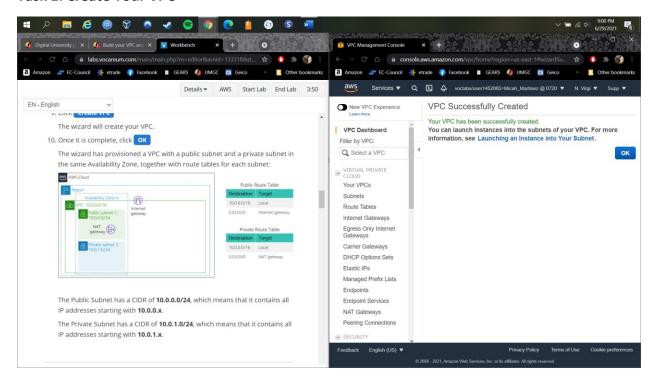
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Appendix - Screenshots
Start Lab

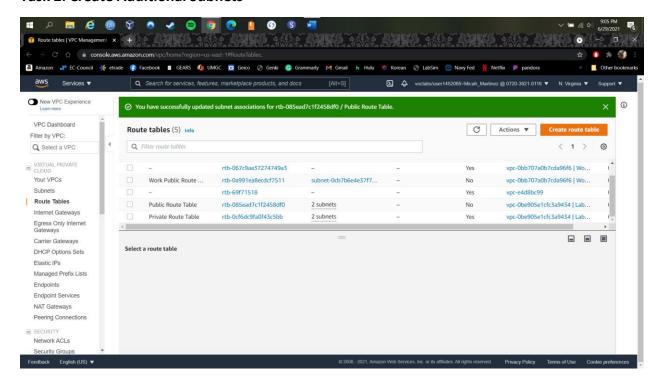## AWS Management Console Name

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Task 1: Create Your VPC

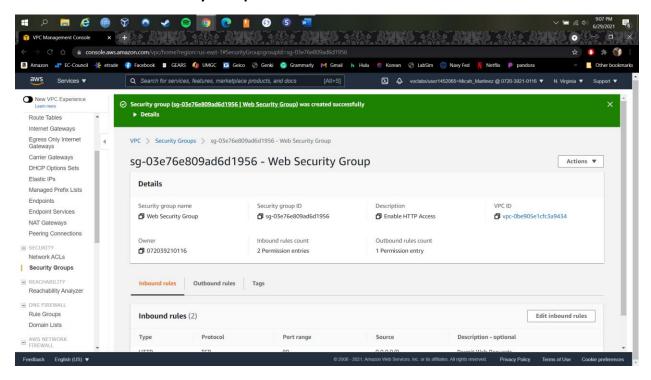## Task 2: Create Additional Subnets

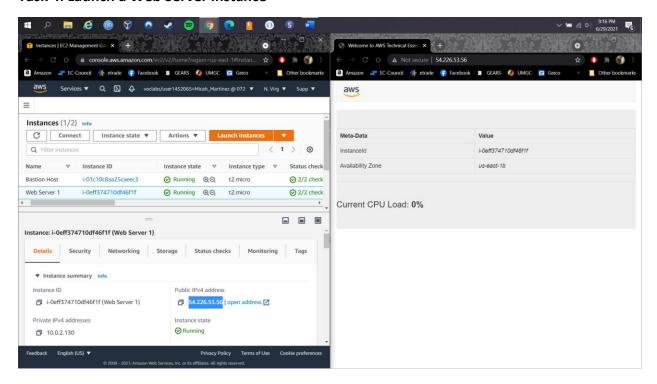## Task 3: Create a VPC Security Group

Task 4: Launch a Web Server Instance

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Lab Complete

End Lab

Region: us-east-1
Lab ID: arn:aws:cloudformation:us-east-1:072039210116:stack/c13546a1333191813542t1w072039210116/d7922340-d94d-11eb-ae53-0ed9163b6ca9
Creation Time: 2021-06-29T19:49:51-0700

====> DELETE has been initiated...
You may close this message box now. Lab resources are terminating ...

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