Breazy Fit

Network Diagram

BREAZY FIT

Github Link:
https://github.com/ChazArvizu/CECS491_Hexadecimators.git

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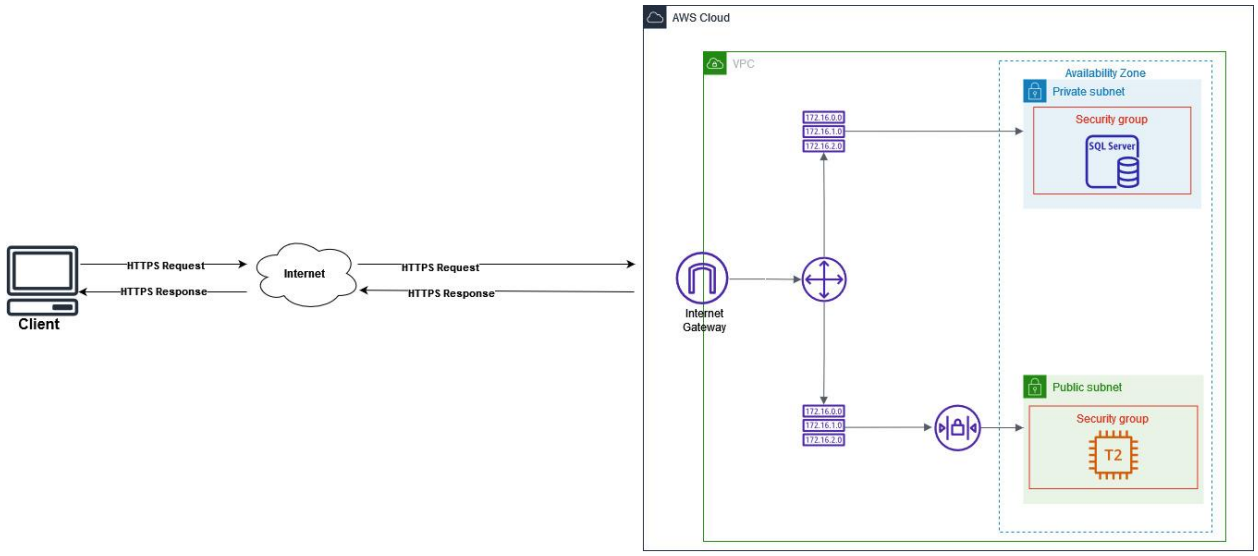
Version History

Version 1.0 - Initially Created: 10/15/2022
Version 2.0 - Implementing fixes to issues mentioned on draft submission: 11/06/2022

Table of Contents

Page Number

1.Network Diagram



1.1 Network Diagram Description:

The network diagram displays how the HTTPS traffic will follow from the client side all the way to the server side held within Amazon Web Service (AWS) cloud. The HTTPS traffic will consist of the following requests: GET, POST, PUT, DELETE, CONNECT, PATCH and HEAD. The diagram also displays a firewall which will help to filter out faulty requests for data and keep the servers more secure. Another point of security displayed in the diagram will be that all requests and responses will be sent with an HTTPS connection.

1.2 Information for HTTPS Requests:

1.2.1 Acquisition of HTTPS:

Hyper Text Transfer Protocol Secure or HTTPS, will ensure that there is a secure, encrypted connection for users from the client side all the way to the server side of the Breazy Fit web application. Using HTTPS will help to minimize the risk of cyber attacks on users and corruption of the application data. To acquire an HTTPS certificate we will follow the documentation found at the following URL at lets encrypt: https://letsencrypt.org/getting-started/.

1.2.2 HTTPS Traffic:

To get an overall idea for each of the different HTTPS requests (GET, POST, PUT, DELETE, CONNECT, PATCH, and HEAD) the following URL was used: https://rapidapi.com/blog/api-glossary/http-request-methods/

GET: The GET request will be used whenever a user would like to acquire their data held in our servers.
POST: The POST request is used whenever a user would like to manipulate their data held in our servers.
PUT: The PUT request
DELETE: The DELETE request will be used when a user would like to delete a specific piece of data.
CONNECT: The CONNECT request will be used to create a specific connection from the client side to the server side.
PATCH: - The PATCH request is used when a user would like to update or change some aspect of their profile.
HEAD: - The HEAD request is about the same as the GET request; there is just no payload in the response.

1.3 Firewall Restrictions:

1.3.1 Description

Through the internet gateway HTTPS request will come in and be passed on to the router. The router will then send the request to a routing table. The routing table will then send the request to a network access control list that will make sure all restrictions are met. The ACL will then pass on the allowed request to security group_1. Security group_1 will then also make sure it passed only allowed request before going to the EC2 instance.

1.3.2 Security Group_1 EC2 Instance

To understand AWS's Viturnal Private Cloud and how their security groups work the following URL was used:
https://docs.aws.amazon.com/vpc/latest/userguide/VPC_SecurityGroups.html#DefaultSecurityGroup

- Allow inbound TCP traffic on port 443 for both IPv4 and IPv6
- Allow outbound TCP traffic on port 443 for both IpPv4 and IPv6
- Allow outbound TCP traffic on port 1433 for Microsoft Sql Server Access

1.3.3 Security Group_2 SQL Server Instance

- Allow inbound TCP traffic on port 1433 for Microsoft Sql Server Access

1.3.4 Network Access Control List (NACL)

- Allow inbound TCP traffic on port 443 for both IPv4 and IPv6
- Allow outbound TCP traffic on port 443 for both IpPv4 and IPv6
- Allow inbound TCP traffic on port 3389

1.4 Hardware:

- AWS EC2 instance of cloud server
- Using AWS firewall for the EC2 instance
- Using our personal computers for the command line interface for administrative tasks and testing.
- Reference:https://www.edrawsoft.com/network-diagrams.html#:~:text=Physical%20network%20diagrams%20illustrate%20the%20relationship%20between%20pieces,router%2C%20and%20signal.%20The%20Usage%20of%20Network%20Diagram

1.5 Availability Zone

Availability zone will use the AZ ID of us-west-1. The zone has both private and public subnets.

1.5.1 Public Subnet

- EC2 Instance T2
    - vCPUs = 1
    - RAM(GiB) = 1.0

1.5.2 Private Subnet

- SQL Server Instance
    - Will use Amazon's RDS to a Microsoft SQL server instance

2. References

Getting Started. (n.d.). Let's Encrypt. (Retrieved October 25, 2022). from: https://letsencrypt.org/getting-started/

What are HTTP requests?: HTTP request methods definition: API glossary. (2021). The Last Call - RapidAPI Blog.(Accessed: October 23, 2022). from: https://rapidapi.com/blog/api-glossary/http-request-methods/

Amazon. (2016). *VPC: Virtual Private Cloud* . Amazon. Retrieved October 27, 2022, from: https://docs.aws.amazon.com/vpc/latest/userguide/VPC_SecurityGroups.html#DefaultSecurityGroup

Network Diagram Complete Guide: EdrawMax. Edrawsoft. (n.d.). Retrieved October 27, 2022, from https://www.edrawsoft.com/network-diagrams.html#:~:text=Physical%20network%20diagrams%20illustrate%20the%20relationship%20between%20pieces,router%2C%20and%20signal.%20The%20Usage%20of%20Network%20Diagram

Subnets

https://docs.aws.amazon.com/vpc/latest/userguide/configure-subnets.html#subnet-security

NACL

https://docs.aws.amazon.com/vpc/latest/userguide/vpc-network-acls.html#nacl-rules