Team Big Data

U-tification

Network Diagram

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Git Repository: https://github.com/JosephArmas/cecs-491A-Team-Big-Data

Version History

Current Version: V4

CHANGES

- Modified
    - Network Diagram
    - Network Diagram Details → Design Decisions
- Added
    - Network Diagram Details

Previous Versions: V1, V2, V3

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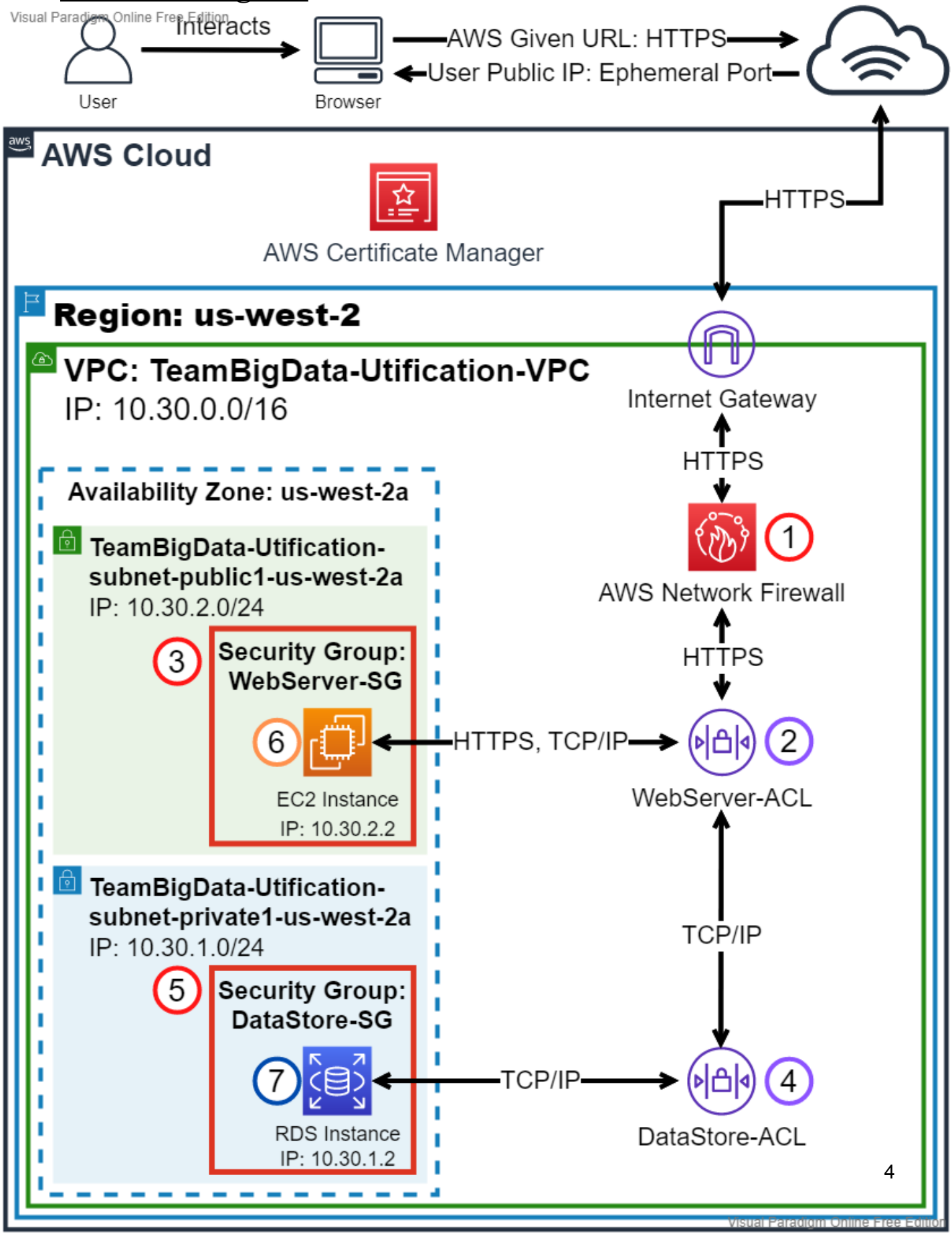
Network Diagram



Network Diagram Details

1

Network Firewall Stateful Rule Group

Protocol	Source IP	Source Port	Dest. IP	Dest. Port	Action
HTTPS	California IP	Ephemeral Port	10.30.2.2	443	Allow

2

WebServer-ACL Inbound Rules

Rule	Type	Protocol	Port Range	Source IP	Allow/Deny
100	HTTPS	TCP (6)	443	California IPs	Allow
200	MYSQL	TCP (6)	3306	10.30.1.2	Allow

WebServer-ACL Outbound Rules

Rule	Type	Protocol	Port Range	Dest. IP	Allow/Deny
100	HTTPS	TCP (6)	443	California IPs	Allow
200	Custom TCP	TCP (6)	5000-5014	10.30.1.2	Allow

3

WebServer-SG Inbound Rules

Type	Protocol	Port Range	Source
HTTPS	TCP	443	California IPs
MYSQL	TCP	3306	10.30.1.2

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DataStore-ACL Inbound Rules

Rule	Type	Protocol	Port Range	Source IP	Allow/Deny
100	Custom TCP	TCP (6)	5000-5014	10.30.2.2	Allow

DataStore-ACL Outbound Rules

Rule	Type	Protocol	Port Range	Dest. IP	Allow/Deny
100	MYSQL	TCP (6)	3306	10.30.2.2	Allow

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DataStore-SG Inbound Rules

Type	Protocol	Port Range	Source
Custom TCP	TCP	5000-5014	10.30.2.2

6 **EC2 Configuration**:

Windows Server 2022
t2.micro
1 vCPU
1Gb Memory
30Gb Storage
IP: 10.30.2.2

Web Sever Microservices Ports
Users: 5000
Map: 5001
Pins: 5002
Alerts: 5003
Reputation: 5004
Events: 5005
User Services: 5006
Upload Picture: 5007
Logging: 5008
Sign in/out: 5009
Registration: 5010
User Management: 5011
Analytics: 5012
UI: 5013
SQL Data Access: 5014

7 **RDS Configuration**:

Microsoft SQL Server
db.m6i.xlarge
4 vCPUs
16 Gb RAM
200 Gb Storage
Not publicly accessible
IP: 10.30.1.2

Design Decisions

- AWS Certificate Manager provides the certificate for users to have a secure connection to the web server using HTTPS with the AWS given URL.
- AWS Network Firewall allows for only California IPs using HTTPS to connect to the web server.
- Web server Security Group inbound rules allow HTTPS traffic from California IPs to the EC2 instance and TCP/IP traffic from the RDS instance to the EC2 instance. This limits who can connect to the EC2 instance.
- Web server Access Control List inbound rules allow HTTPS traffic from California IPs and TCP/IP traffic from the Data Store to the EC2 instance. The outbound rules allow HTTPS traffic from the EC2 instance to the user and TCP/IP traffic from the EC2 instance to the RDS instance. This limits who can communicate to the EC2 instance.
- Data store Access Control List inbound rules allow TCP/IP traffic from the EC2 instance to the RDS instance. The outbound rules allow for TCP/IP traffic from the RDS instance to the EC2 instance. This limits the RDS to only be able to communicate with the EC2 instance.
- Data store Security Group inbound rules allow TCP/IP traffic from the EC2 instance to the RDS instance. This limits the RDS to only be able to communicate with the EC2 instance.
- The reason for choosing the EC2 instance is that it is the best free tier configuration.
- The reason for choosing the RDS instance is that it is the best free tier configuration. Having the RDS be not publicly accessible ensures that it cannot establish a connection through the internet.

References

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