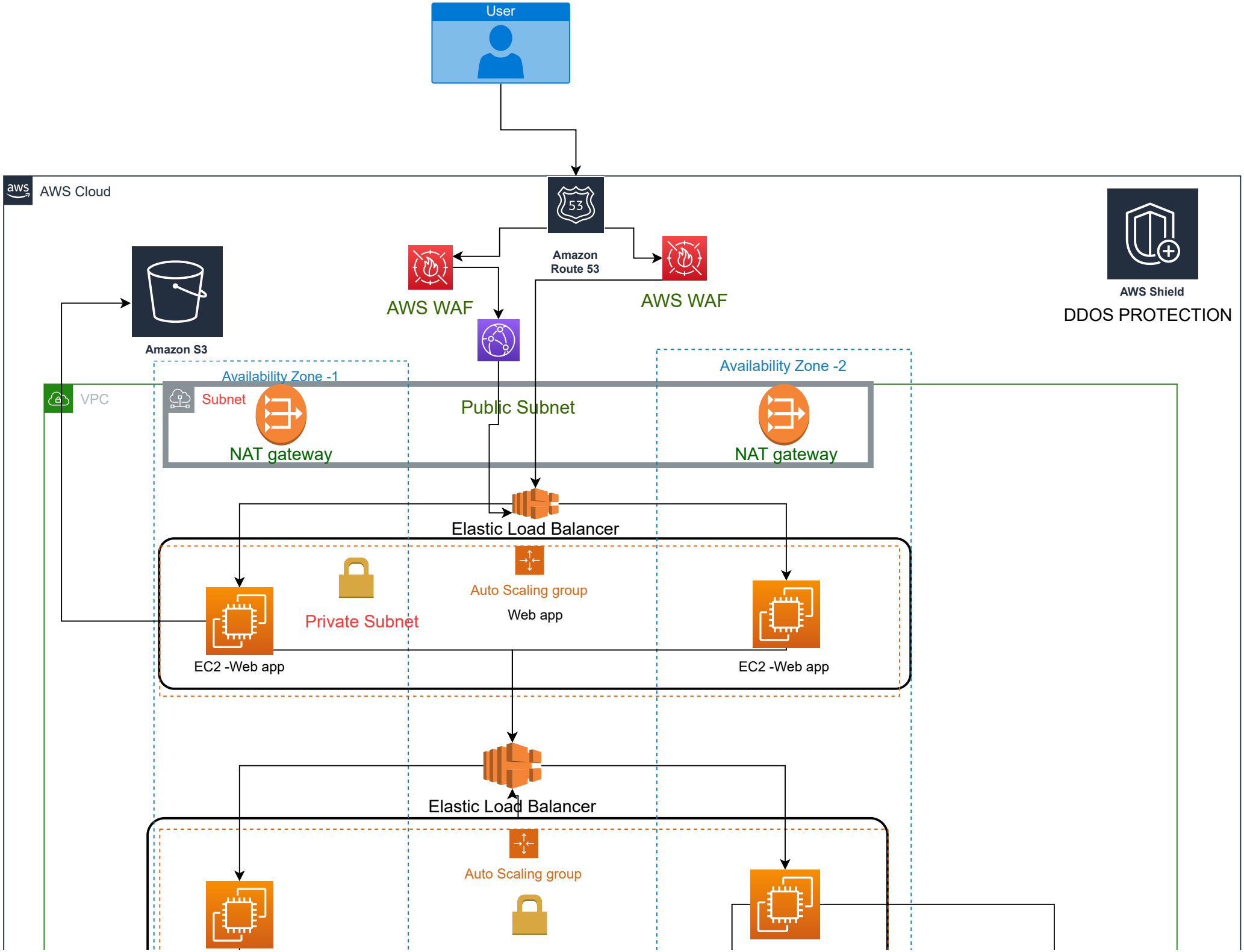
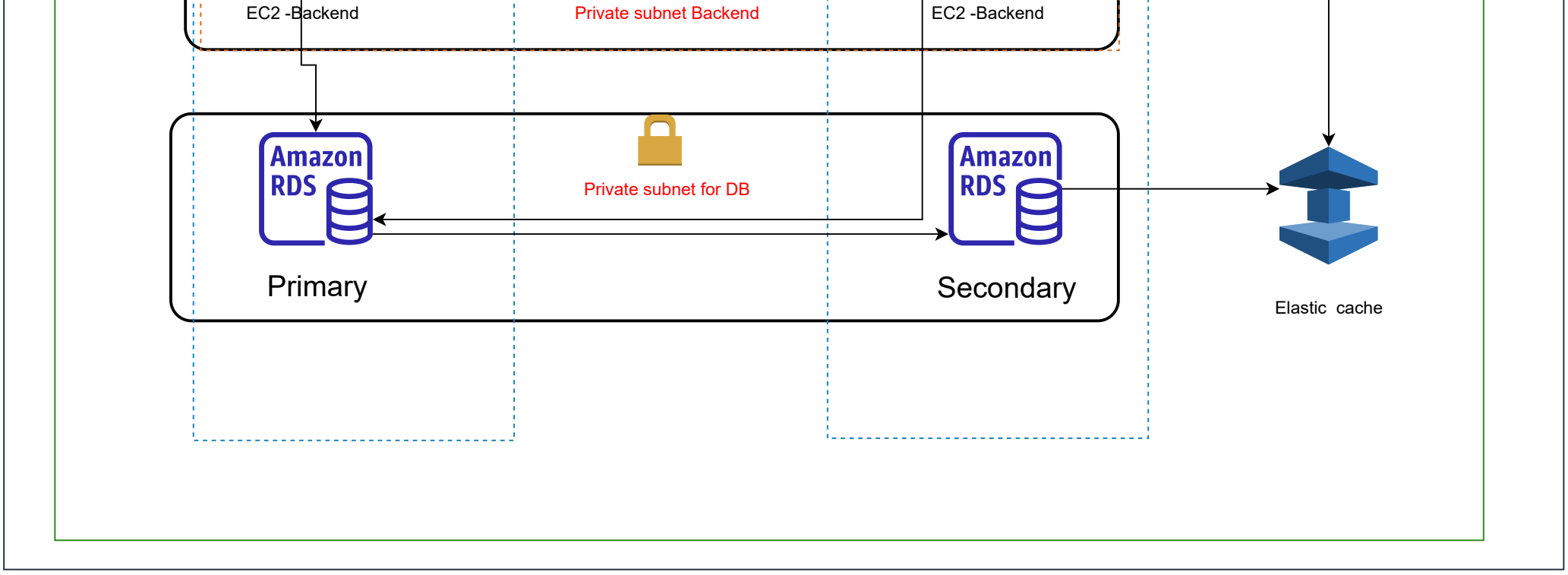

User
AWS Cloud
Amazon Route 53
AWS WAF
AWS WAF
AWS Shield
DDOS PROTECTION
Amazon S3
Availability Zone -1
Availability Zone -2
VPC
Subnet
Public Subnet
NAT gateway
NAT gateway
Elastic Load Balancer
Auto Scaling group
Web app
Private Subnet
EC2 -Web app
EC2 -Web app
Elastic Load Balancer
Auto Scaling group


EC2 -Backend
Private subnet Backend
EC2 -Backend
Amazon RDS
Private subnet for DB
Amazon RDS
Primary
Secondary
Elastic cache

Overview:

Whenever a user makes a request

1: The request goes through the Route53 service, which helps domain name translation.

2: After Translation, the AWS WAF check all the rules from its ACL Passes it to Cloud Front or NAT Gateway directly

3: NAT gateway ensures that external entities cannot initiate a connection with the instances

4) The Elastic load balancer is used to distribute the load on instances in both the availability zones

5) Autoscaling group based on the load and scaling policies scales the web app.

6 Now, the Web app makes a network call to the backend server to query or request any functionality.

7) The backend servers to retrieve data look in the cache first. If the required data is not found in the elastic cache, it makes a network call to the Database.

Services Used :

Domain name Translation: We are using the **Route53**

Benefits: a variety of routing types, including Latency Based Routing, Geo DNS, Geoproximity, and Weighted Round Robin

Firewall: For the security of web applications/APIs, we are using **AWS WAF**

Benefits: We can create security rules that control bot traffic and block common attack patterns, such as SQL injection or cross-site scripting and OWASP Top Ten Vulnerabilities.

CDN: **Amazon CloudFront**(With WAF): a content delivery network (CDN) service built for high performance, security, and developer convenience.

DDOS Protection: **AWS Shield** is a managed Distributed Denial of Service (DDoS) protection service that safeguards applications running on AWS

NAT Gateway: A NAT gateway is a Network Address Translation (NAT) service. We can use a NAT gateway so that instances in a private subnet can connect to services outside our VPC, but external services cannot initiate a connection with the instances.

Load Balancing: **AWS Elastic Load Balancing service** Distributes the loads on different machines.

Auto Scaling group
An Auto Scaling group contains a collection of Amazon EC2 instances that are treated as a logical grouping for automatic scaling and management.

Amazon Relational Database Service (Amazon RDS) makes it is easy to set up, use, and scale a database in the cloud.

Amazon ElastiCache: is a fully managed, in-memory caching service.

Amazon Virtual Private Cloud (Amazon VPC): It gives us maximum control over our virtual networking environment, including resource placement, connectivity, and security.