The Design of HR Portal

1. Design purpose

An enterprise HR Portal application including:
– (Optional) Single Sign-on (SSO) / AD authentication with SSL/TLS encryption
– Application / Web portal for viewing/browsing (sample) enterprise employee data

2. Requirements

- Elasticity: Your infrastructure must scale the service up and down when necessary.
- Auto recovery: Your infrastructure must identify different kinds of failures and recover the application automatically while also providing monitoring data.
- Failure Isolation: To be included in your design choices, identify 5 single points of failure and architect them out.
- Performance: Must be able to handle bursts of traffic.

3. Design choices

Mandatory components:

Front-end : S3 static site (hr portal website);
Back-end : AWS EC2(web server) + AWS RDS
Storage : AWS S3

Optional Components:
Authantication : AWS Cognito
DNS: AWS Route 53

For Elasticity: Auto scaling for EC2(web server)

For Auto recovery:

(optional) **Route53:** cross-region health check and failover

ALB: health check for ec2 in target group, and failover

(optional) **CloudWatch:** CPU/Mem utilization warning, trigger action like ec2 restart or ASG policy;

Enable **S3-versioning**: roll out when data corruption

For Failure Isolation:

- 5 single points of failure:
    1. Single region failure for ALB: route 53 failover
    2. Single region failure S3: S3 cross-region replication;
    3. Single EC2 failure: Auto Scaling;
    4. Single DB instance failure: multi-az DB
    5. Single Idp(user pool) failure: cross-region user pool, primary and standby Cognito
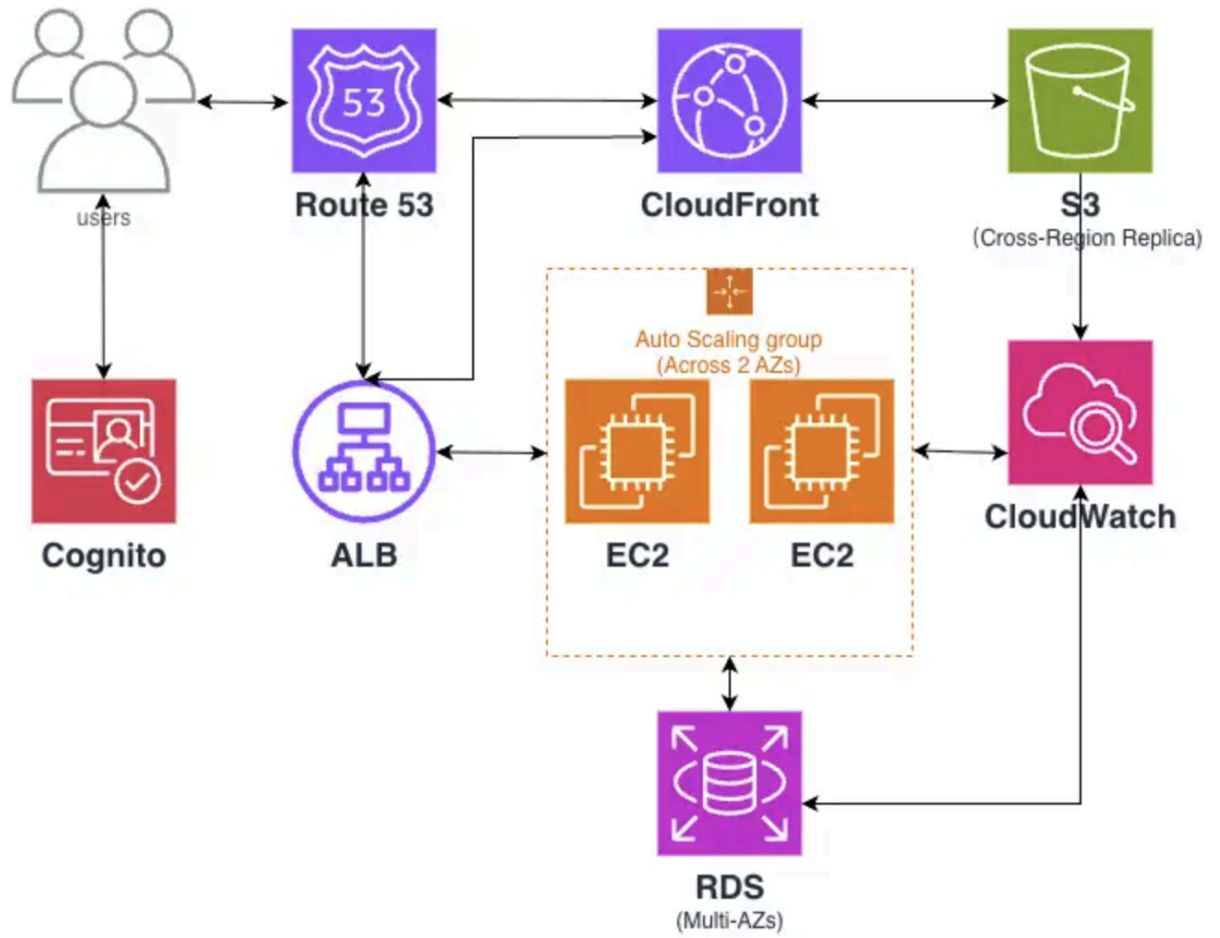
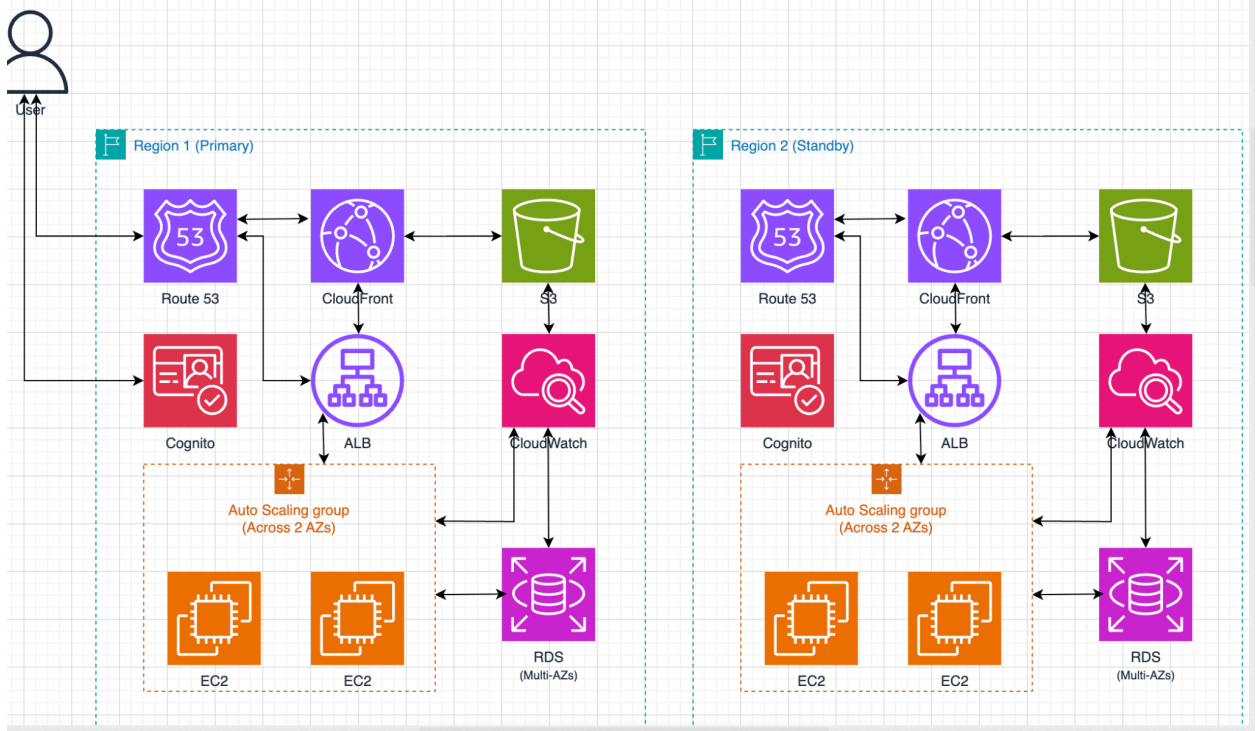**For Performance:**

Front-end：S3 static site + Cloud Front;

Back-end：rds replica

4. Diagram of the infrastructure components
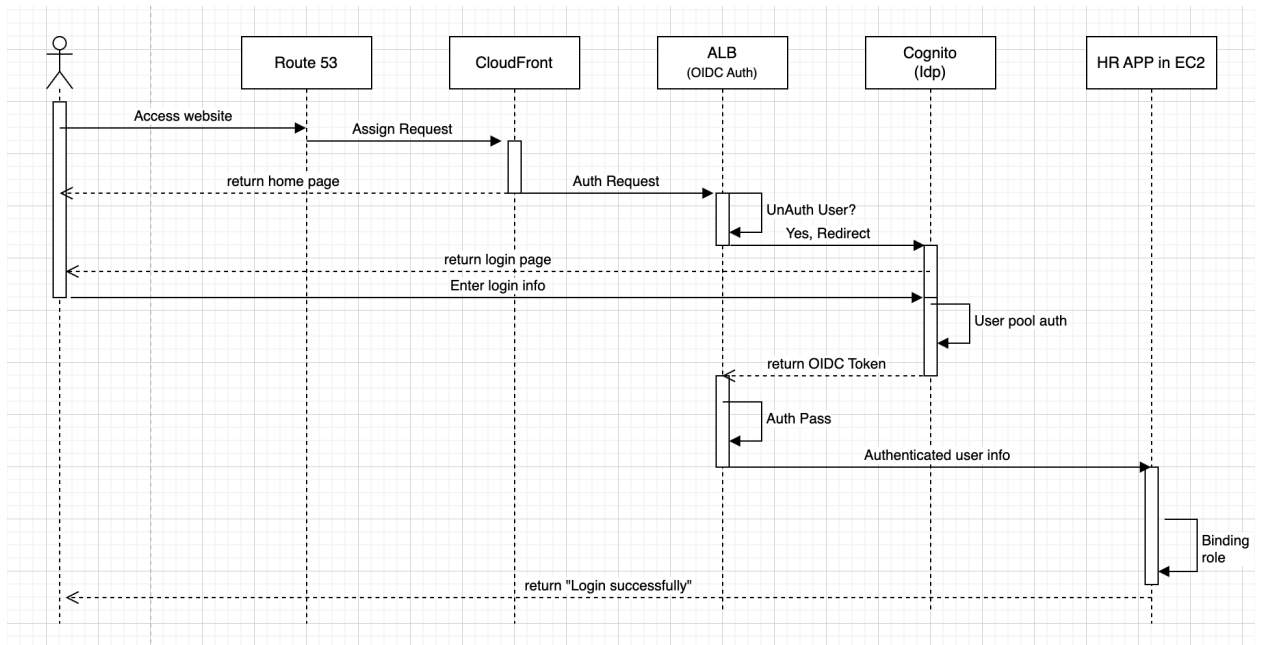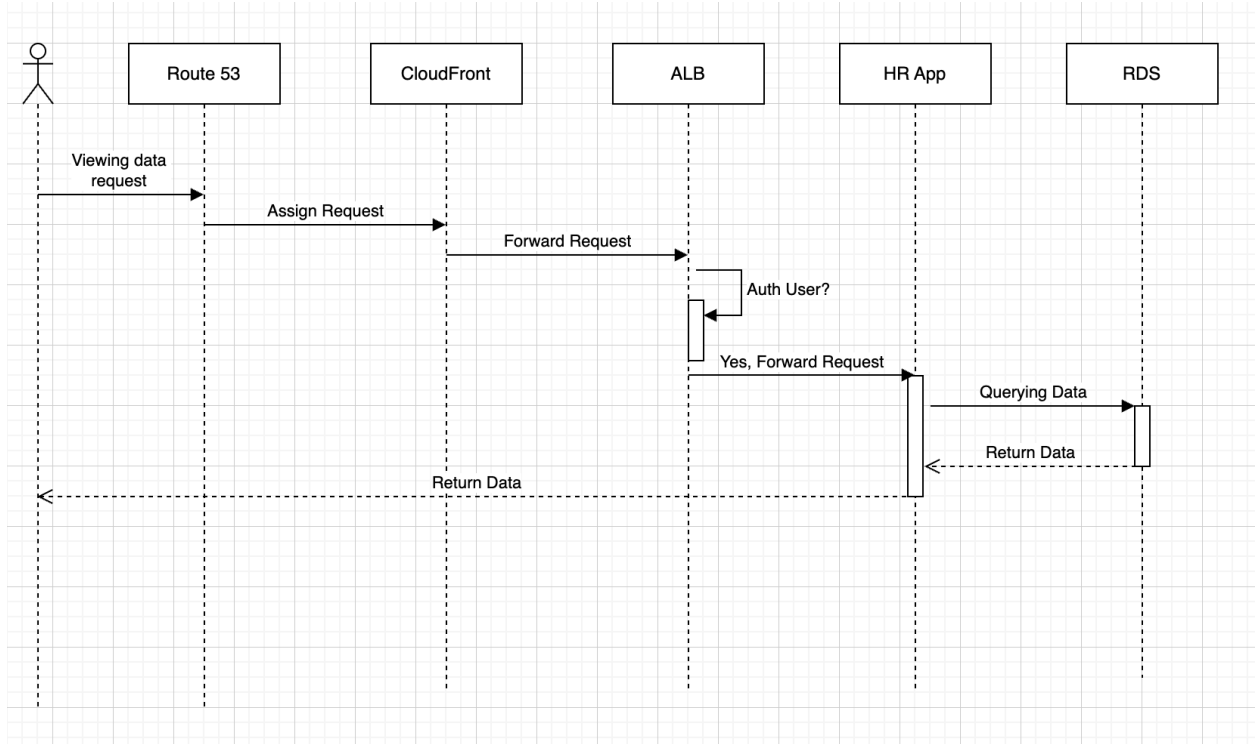
Single region:

Cross-region for fail over

5.Sequence diagrams of functions

A. SSO (optional)

B. Viewing data

C. Upload files