



Design and Process Workbook

1a. Defining Your Case Study

Come up with a case study. Then fill in the next slide.

Examples:

- Online Banking Portal
- Ride sharing application (like Uber)
- Online shopping site
- Something else...

1b. [Case Study Name Here]

Brief description:

List a few main features:

List roles of typical users:

2a. Writing User Personas

Create two user personas that describe typical users of your application. Add a new slide for each persona.

Example persona:

Jocelyn is a busy working mom who wants to access MegaCorp Bank to check her account balances and make sure that there are enough funds to pay for her kids' music and sport lessons. She also uses the web site to automate payment of bills and see her credit account balances. Jocelyn wants to save time and money, and she wants a credit card that gives her cash back.

2b. Writing User Stories

Create three user stories for the roles you defined earlier.

Create a new slide for each user story.

Example user story:

Balance Inquiry

***As a** checking account holder, **I want to** check my available balance at any time of day, **so that** I am sure not to overdraw my account.*

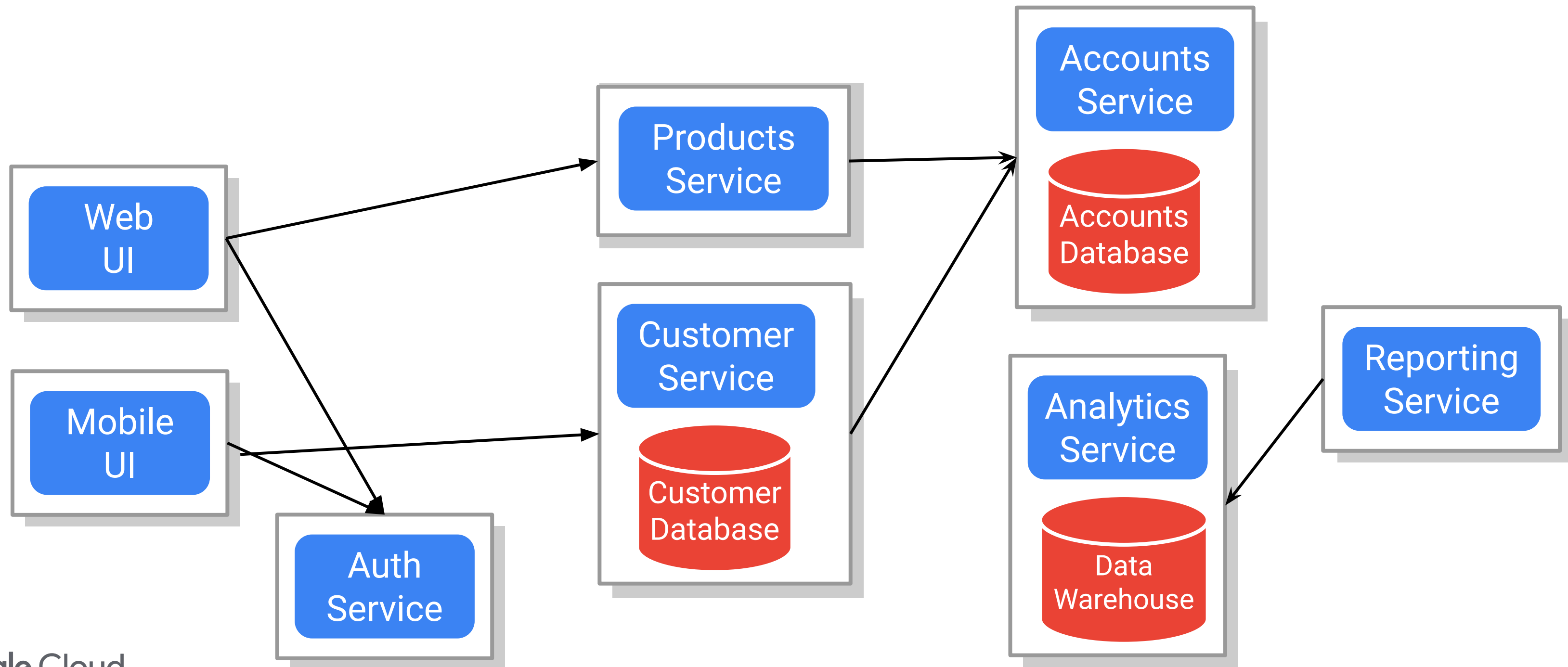
3. Defining SLIs and SLOs

Based on requirements of your case study, fill in the table below with SLOs and SLIs.

User Story	SLO	SLI
<i>Balance Inquiry</i>	<i>Available 99.95%</i>	<i>Fraction of 200 vs 500 HTTP responses from API endpoint measured per day</i>
<i>Balance Inquiry</i>	<i>95% of requests will complete in under 300 ms.</i>	<i>Time to last byte GET requests measured every 10 seconds aggregated per minute</i>

4. Design Microservices for Your Application

Draw a diagram showing your application's microservices and their connections.



5. Designing REST APIs

Fill in the table with your services and their resources and operations.

Service name	Collections	Methods
Account Service	transactions	list deposit withdraw transfer








6. Defining Storage Characteristics

Fill in the worksheet of required storage features.

Service	Structured or Unstructured	SQL or NoSQL	Strong or Eventual Consistency	Amount of Data (MB, GB, TB, PB, ExB)	Read only or Read/Write
Account Service	Structured	SQL	Strong	GB	Read/Write

7. Choosing Google Cloud Storage and Data Services

Choose the Google Cloud storage products for each service.

Service							
Persistent Disk							
Cloud Storage							
Cloud SQL							
Firestore							
Cloud Bigtable							
Cloud Spanner							
BigQuery							
Account Service							




8a. Defining Network Characteristics for Your Services

Fill in the worksheet of required network features.

Service	Internet facing or Internal only	HTTP	TCP	UDP	Multiregional?
<i>account</i>	<i>Internal only</i>		Yes		No

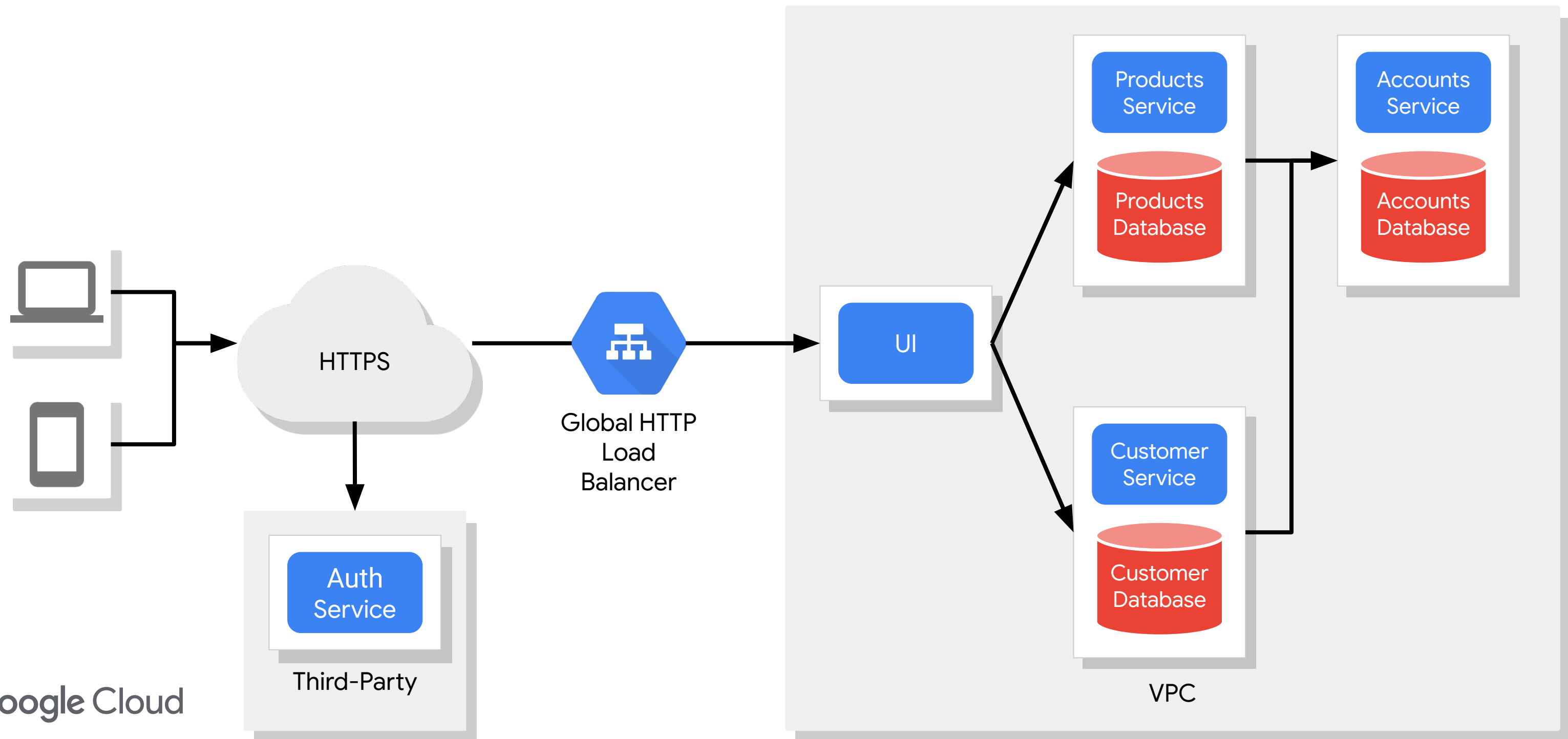
8b. Select the Load Balancers for Your Services

Choose the Google Cloud load balancer products for each service.

Service	 HTTP	 TCP	 UDP
Account		X	

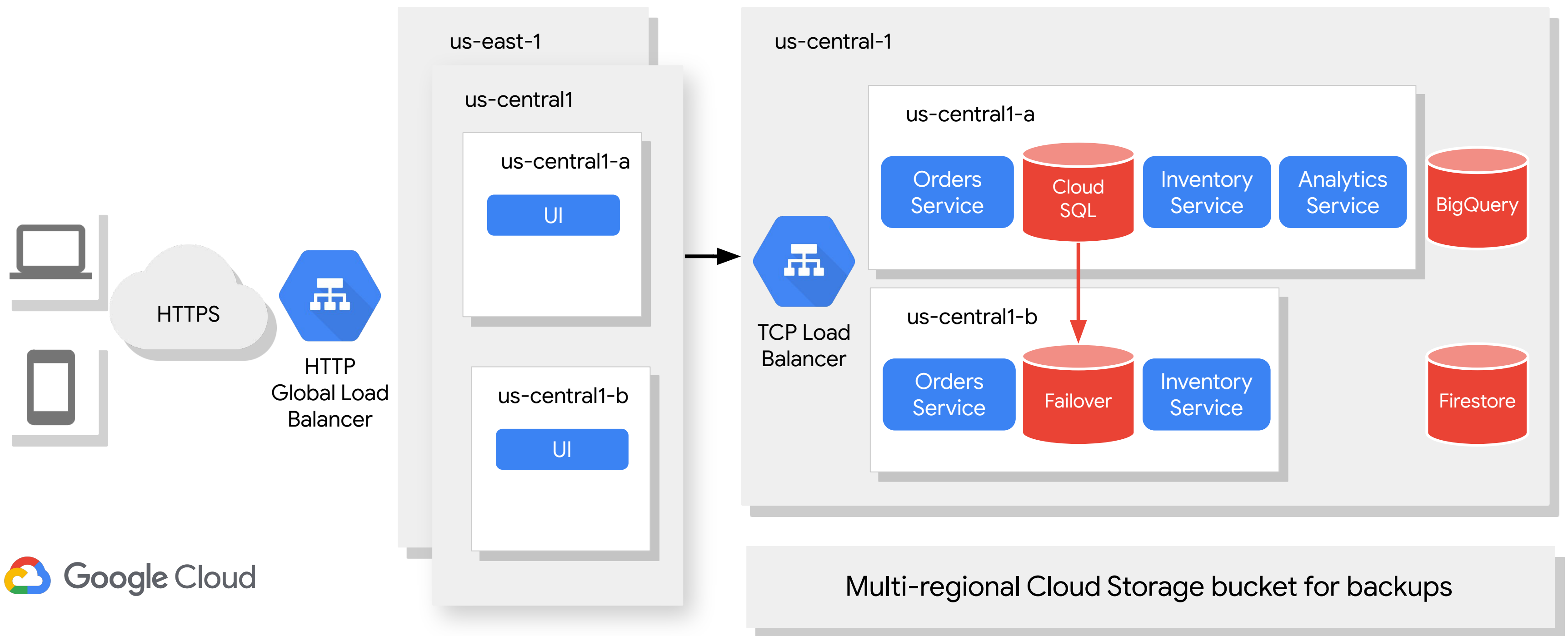
9. Diagramming Your Network

Draw a diagram that depicts how your services will communicate over the network. Include regions, zones, load balancers, CDN, and DNS if applicable.



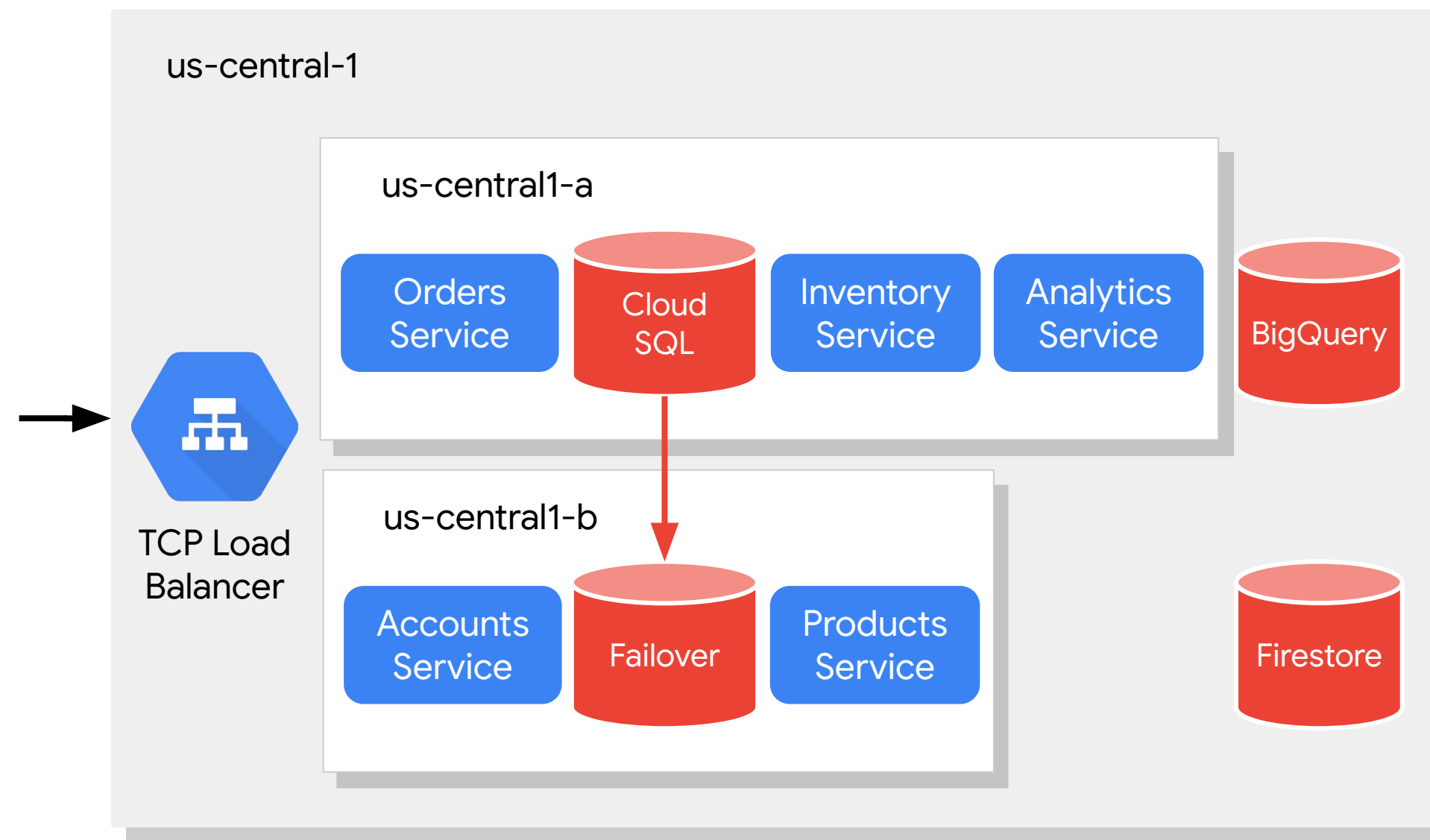
10. Designing Reliable, Scalable Applications

Even if some service is down, we want the web frontend of our application to be available nearly all the time. We also want the website to be fast with very low latency to users all over the world. Draw a diagram that depicts how we can achieve this using Google Cloud services.



11a. Disaster Recovery Scenario

You've deployed for high availability by replicating resources in multiple zones. However, to meet regulatory requirements, you need a plan to recover from a disaster that brings down the entire region. The current architecture is depicted below. On the next slide, create a plan to bring up your application in another region if your main region is down.



11b. Service Disaster Recovery Scenarios

Write a high-level list of possible scenarios.

Service	Scenario	Recovery Point Objective	Recovery Time Objective	Priority
<i>Ratings Service</i>	<i>Programmer deleted all ratings accidentally</i>	<i>24 hours</i>	<i>1 hour</i>	<i>Med</i>
<i>Orders Service</i>	<i>Orders database crashes</i>	<i>0 (can't lose any data)</i>	<i>2 minutes</i>	<i>High</i>

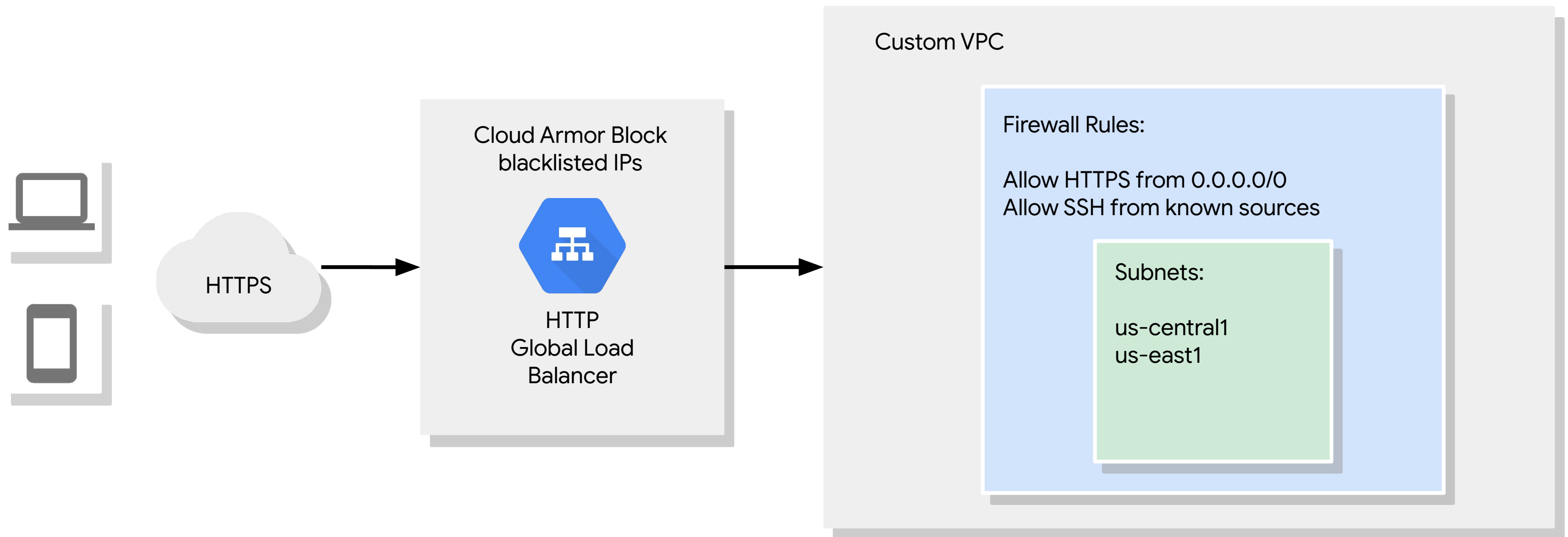
11c. Resource Disaster Recovery Plans

For each scenario, fill in the table.

Resource	Backup Strategy	Backup Location	Recovery Procedure
<i>Ratings Database</i>	<i>Daily automated backups</i>	<i>Multi-Regional Cloud Storage Bucket</i>	<i>Run Restore Script</i>
<i>Orders Database</i>	<i>Failover replica plus daily backups</i>	<i>Multi-zone deployment</i>	<i>Automated</i>

12. Modeling Secure Google Cloud Services

Draw a diagram that depicts how you will secure your services. Include firewalls, IAM roles, service accounts and network resources as appropriate.



13. Cost Estimating and Planning

Use the [pricing calculator](#) to determine the cost of your microservices.

Service name	Google Cloud Resource	Cost
Accounts	Cloud SQL	<u>\$574.71/month</u>