



ComoClub Architecture Proposal

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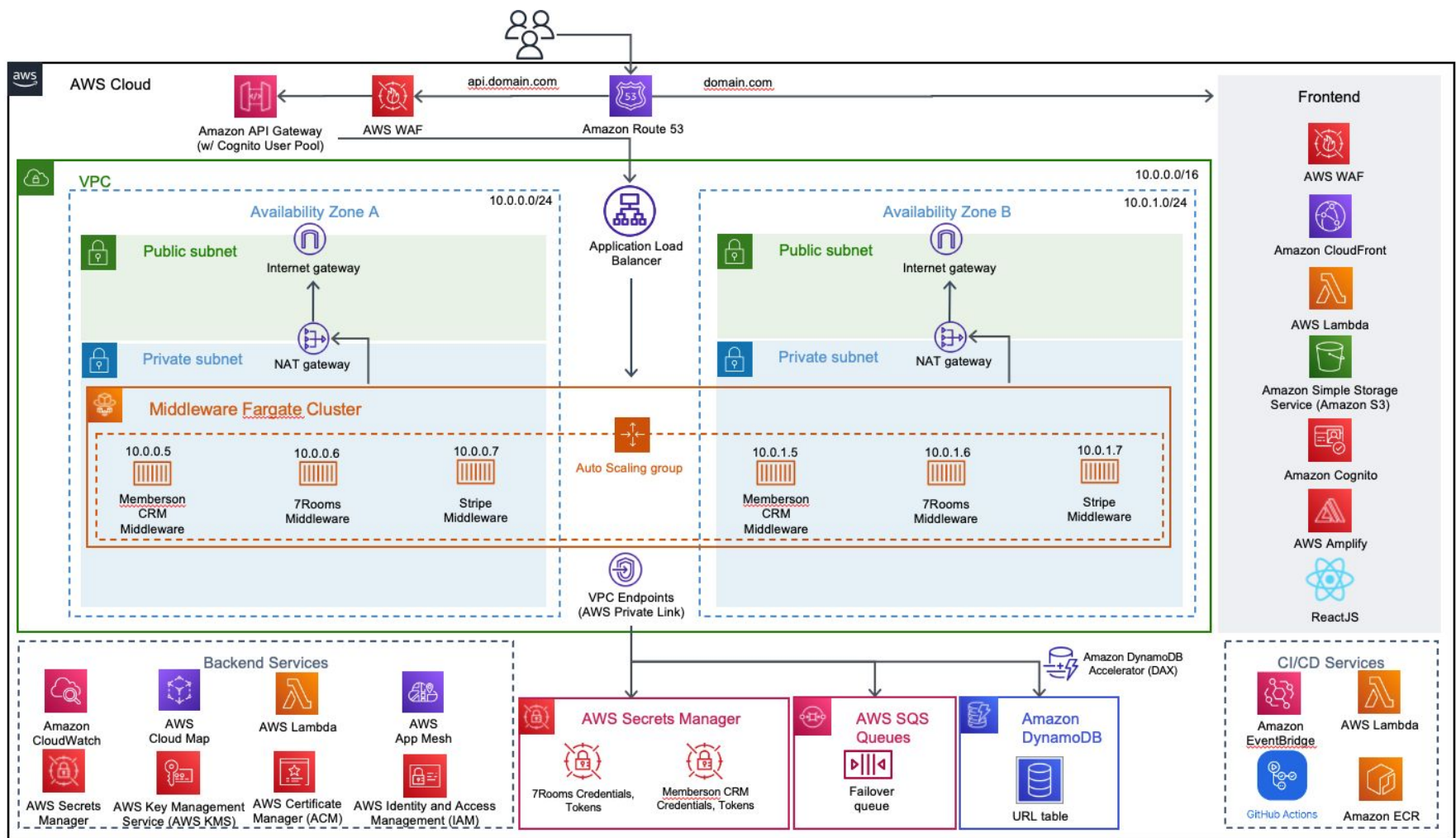


01

Our Solution

Proposed System Architecture








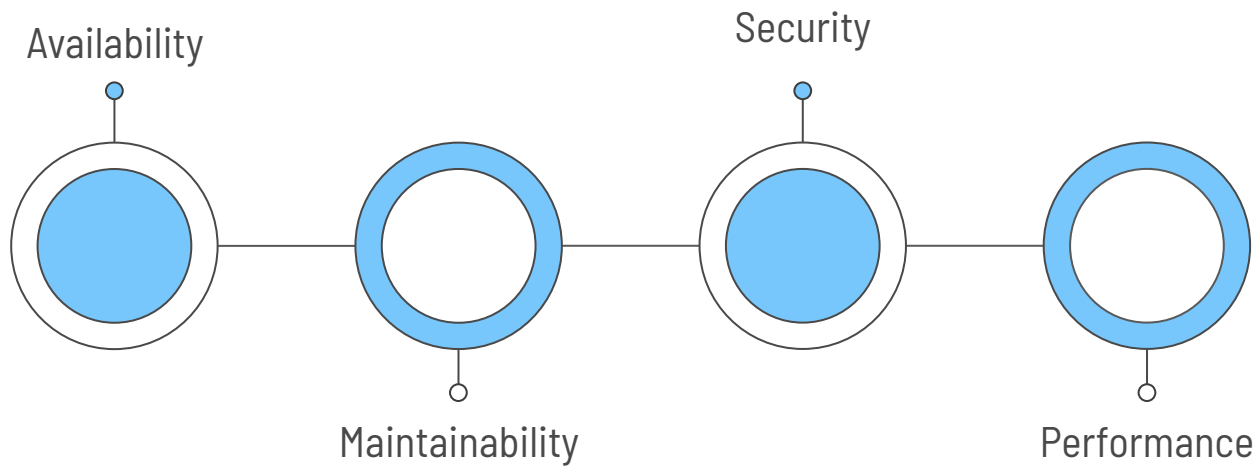
02

Quality Attributes

How our architecture achieves the
4 main qualities



Quality Attributes



Availability

Redundancy

Active-active node configuration
across 2 AZs

AWS Managed Services

Guaranteed higher availability

Failover Plan

Provide degraded service with AWS
SQS Queue instead of no service

Maintainability

Microservices

Loose coupling of services and Modularity

Design Patterns

Facade design pattern via API Gateway

Infrastructure as Code

Terraform provisions infra through code instead of manual processes

AWS Managed Services

Serverless computing solutions

CI/CD

Automate code deployment from code to container



Security

VPC Encapsulation

Traffic does not traverse public internet unless it is necessary

Encryption


Data at rest and data in transit is encrypted

Authentication

Frontend & API endpoints are secured (AWS Cognito)

AWS Web Application Firewall

Integrated with CloudFront & API gateway to secure app & APIs



Performance

Autoscaling

Scheduled & target tracking policies reduce strain of servers

AWS Managed Services

Serverless services that automatically scales with demand

Caching


CloudFront's multi-tier cache and DAX's in-memory caching



03

Feature Walkthrough

Example use cases to demonstrate
how our system architecture works



User Login



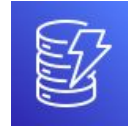
Client side



AWS Lambda



AWS Secrets Manager



AWS DynamoDB

memberson[®]
CONNECT ENGAGE TRANSACT

MembersonCRM



Cognito

Login

Retrieve authorisation
tokens/ credentials

Retrieve Memberson API link

Login

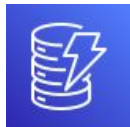
Get or Create user in Cognito user pool

Cognito Login

Token rotation



AWS Lambda
(w/ CRON job)



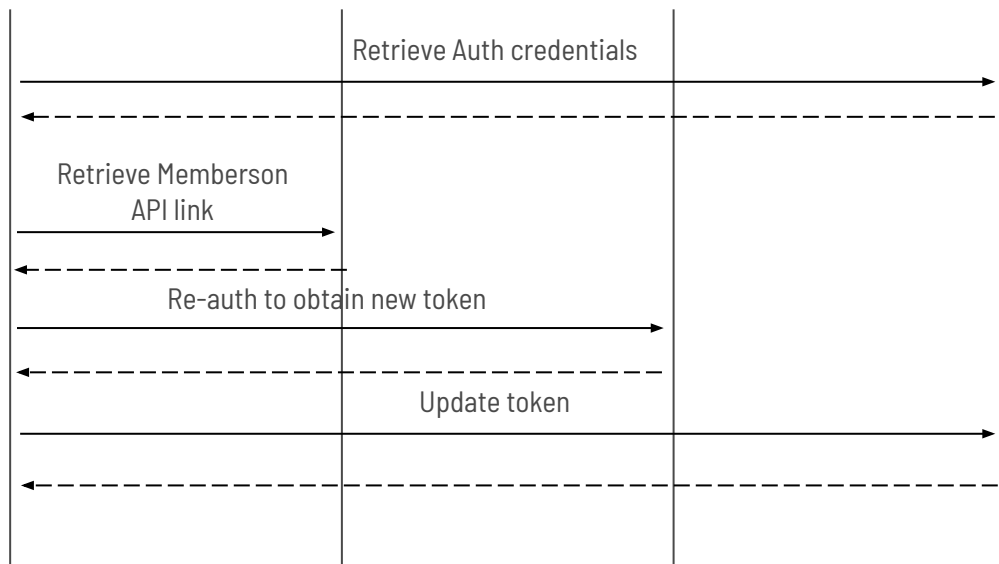
AWS DynamoDB

memberson®
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MembersonCRM



AWS Secrets Manager



2. View Experience



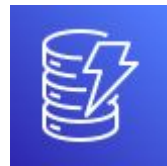
Client side



7Rooms Middleware



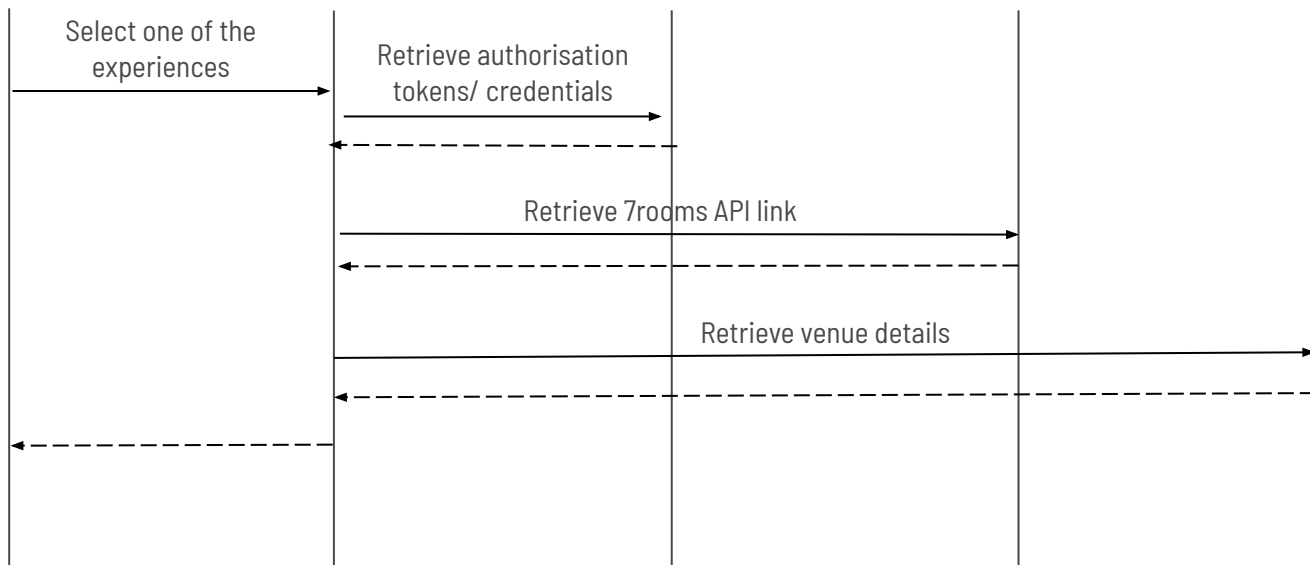
AWS Secrets Manager



DynamoDB

SEVENROOMS

7Rooms



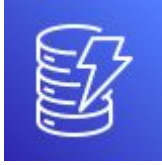
2. View Experience (Failover)



7Rooms Middleware



AWS Secrets Manager



DynamoDB

SEVENROOMS

7Rooms



AWS SQS



AWS Lambda

Retrieve authorisation
tokens/ credentials

Retrieve 7rooms API link

Retrieve venue details

Send failed request details

Read from FIFO queue

Retry request



3. Pay with COMO Credits (Experience) - Retrieve Points



Client side



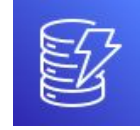
Memberson
Middleware



7Rooms
Middleware



AWS Secrets
Manager



DynamoDB

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MembersonCRM

SEVENROOMS

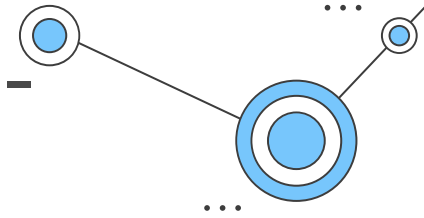
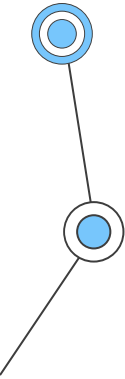
7Rooms

Click "Book"

Retrieve authorisation
tokens/ credentials

Retrieve Memberson API link

Retrieve user's available points



3. Pay with COMO Credits (Experience) - Make Payment



Client side



Memberson
Middleware



7Rooms
Middleware



AWS Secrets
Manager



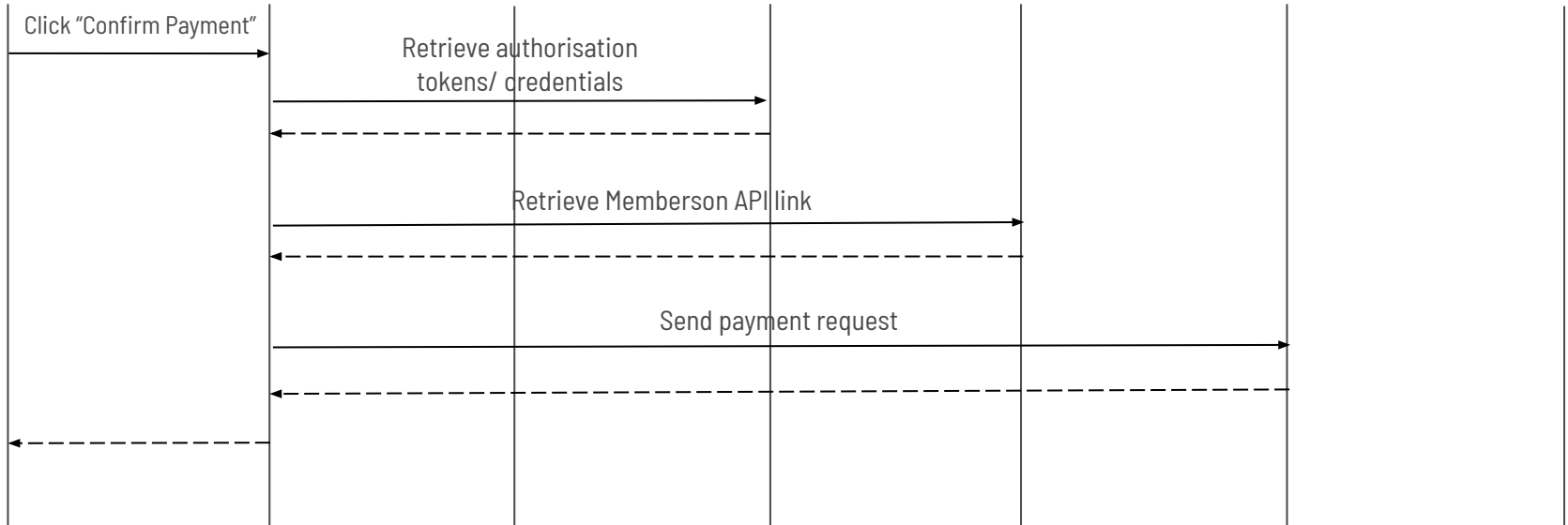
DynamoDB



MembersonCRM



7Rooms



3. Pay with COMO Credits (Experience) - Make Booking



Client side



Memberson
Middleware



7Rooms
Middleware



AWS Secrets
Manager



DynamoDB

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MembersonCRM

SEVENROOMS

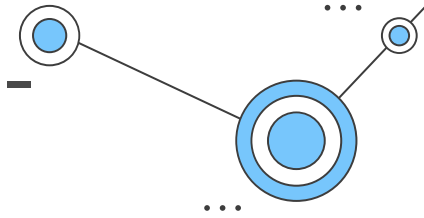
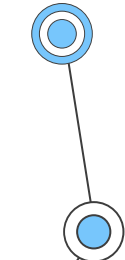
7Rooms

Booking request

Retrieve authorisation tokens/
credentials

Retrieve 7room API link

Send booking request



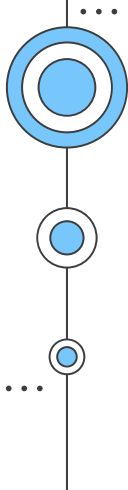


04

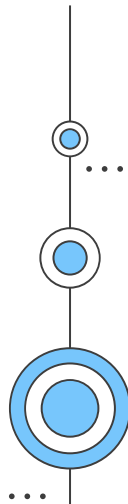
Proposed Budget

Development and production costs





Activity / Hardware / Software / AWS Service	Description	Cost (USD)
Amazon API Gateway	HTTP API requests units (exact number), REST API request units (exact number), Cache memory size (GB)(None), WebSocket message units (thousands), Average message size (32 KB), Requests (per hour), Requests (10000 per day)	1.29
DynamoDB on-demand capacity	Average item size (all attributes)(1 KB), Data storage size (0.1 GB)	0.03
DynamoDB Accelerator (DAX) clusters	DAX nodes (1 instances of type t3.small)	44.53
Amazon Virtual Private Cloud (VPC)	Number of NAT Gateways (2)	86.26
Amazon Virtual Private Cloud (VPC)	Number of interface VPC endpoints per region (1)	18.99
Amazon Simple Queue Service (SQS)	DT Inbound: Internet (0 GB per month), DT Outbound: Not selected (0 TB per month), Standard queue requests (million per month), FIFO queue requests (1 million per month)	0.50
Amazon CloudWatch	Number of Custom/Cross-account events (10), Standard Logs: Data Ingested (1 GB), Vended Logs: Data Ingested (1 GB), Logs Delivered to S3: Data Ingested (1 GB), Number of Lambda functions (4), Number of requests per function (60 per hour)	11.49
AWS Secrets Manager	Number of secrets (12), Average duration of each secret (30 days), Number of API calls (30000 per day)	9.36
Amazon Cognito	Advanced security features (Enabled), Number of monthly active users (MAU) (300) ...	15.00
Amazon Elastic Container Registry (Singapore)	DT Inbound: Internet (1 TB per month), DT Outbound: Not selected (0 TB per month), Amount of data stored (50 GB per month)	5.00



Activity / Hardware / Software / AWS Service	Description	Cost (USD)
AWS Web Application Firewall (WAF)	Number of Web Access Control Lists (Web ACLs) utilized (1 per month), Number of Rules added per Web ACL (7 per month), Number of Rule Groups per Web ACL (per month), Number of Managed Rule Groups (per month), Number of Rules inside each Rule Group (per month)	12.60
AWS Fargate	Average duration (1 days), Amount of ephemeral storage allocated for Amazon ECS (20 GB), Number of tasks or pods (8 per day)	89.97
Amazon Route 53	Hosted Zones (1), Basic Checks Within AWS (2), Number of domains stored (2)	2.90
Application Load Balancer	Number of Application Load Balancers (1)	49.06
Amazon Elastic Container Registry (Sydney)	DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), Amount of data stored (50 GB per month)	5.00
AWS Lambda	Number of requests (100000)	0.00

\$351.98

Production Cost



**Thank
You!**

