NOTIFICATION PLATFORM

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INTRODUCTION

OVERVIEW

Serverless Guru is engaged in sending notifications to its customers and needs a solution to efficiently enable multiple services send notifications to their end-users through various channels such as SMS, Email and push notifications and if necessary room for more.

PROBLEM STATEMENT

- Notifications need to be delivered to user via different channels like SMS, Email and Push notification with possibility for extensibility.
- The system should be designed primarily for deployment on AWS Cloud.
- The solution should be highly available, scalable, secure and highly available.

SOFTWARE REQUIREMENTS

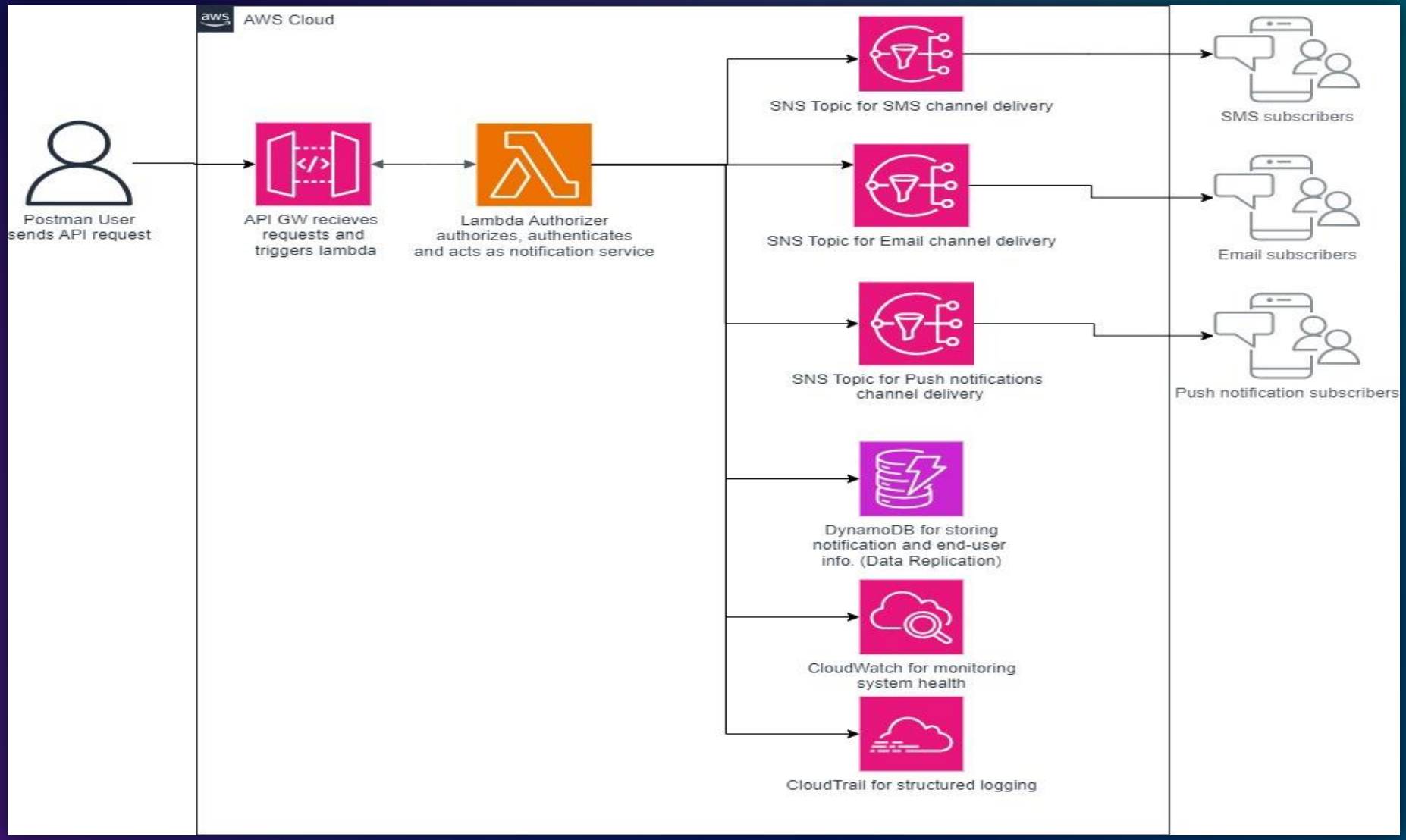
FUNCTIONAL

- The API gateway should be able to receive request securely and forward them to the lambda function.
- The lambda parses the request, determines the intended channel and forwards the mail, then stores the information in DynamoDB.
- SNS topics publish messages to subscribed end-users.
- DynamoDB stores payload information.

NON-FUNCTIONAL

- Solution should be able to scale based on increase user load.
- Should be highly available and reliable in case of disaster with fault tolerant mechanisms.
- Solution should be very secure, ensuring data security at every point of the system via encryption and use of API keys.
- Above all it should be cost effective by using serverless AWS services.

SOLUTION DESIGN OVERVIEW



DESIGN OVERVIEW

A REQUEST IS MADE IN POSTMAN WHICH IS RECEIVED BY API GATEWAY TRIGGERING A LAMBDA FUNCTION TO CHECK THE APPROPRIATE CHANNEL, SEND THE MESSAGE AND STORE IN DYNAMODB

SCALABILITY & HIGH AVAILABILITY

INCREASE IN NUMBER OF USERS AND HIGH AVAILABILITY ARE HANDLED BY ADDING MORE SUBSCRIBERS TO THE VARIOUS SNS TOPICS

SECURITY

API REQUESTS REQUIRE AN API KEY TO WORK, IAM ROLES PREVENT UNAUTHORIZED ACCESS AND DATA IS ENCRYPTED AT ALL POINTS OF THE ARCHITECTURE

MONITORING AND LOGGING

CLOUDWATCH MONITORINGS THE LAMBDA FUNCTION EXECUTIONS, API GATEWAY ACCESS, DYNAMODB OPERATIONS WHILE CLOUDTRAIL IS USED FOR LOGGING PURPOSES.

MULTI-CHANNEL HANDLING

THIS IS ACCOMPLISHED THROUGH THE IF-ELSE LOOP IN THE LAMBDA FUNCTION, USING THE NOTIFICATION-TYPE AS A CONDITION

EXTENSIBILITY

NEW CHANNELS ARE ADDED AS A NEW SNS TOPIC AND THE CORRESPONDING IF-ELSE LOOP ADDED IN THE FUNCTION

CONCLUSION

In all, the implementation of the Notification Platform for deployment on AWS following this architecture provides a scalable, secure and cost-effective approach to sending notifications to end users by leveraging AWS services such as Lambda, DynamoDB, API Gateway and SNS.

RECOMMENDATION

Regular performance monitoring and optimization of Lambda functions and DynamoDB should be performed to ensure scalability.
Implement automated backups and disaster recovery strategies to safeguard against data loss.
Implement loop back mechanism from notifications stored in DynamoDB to retry sending notifications which did not go.

THANK YOU

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