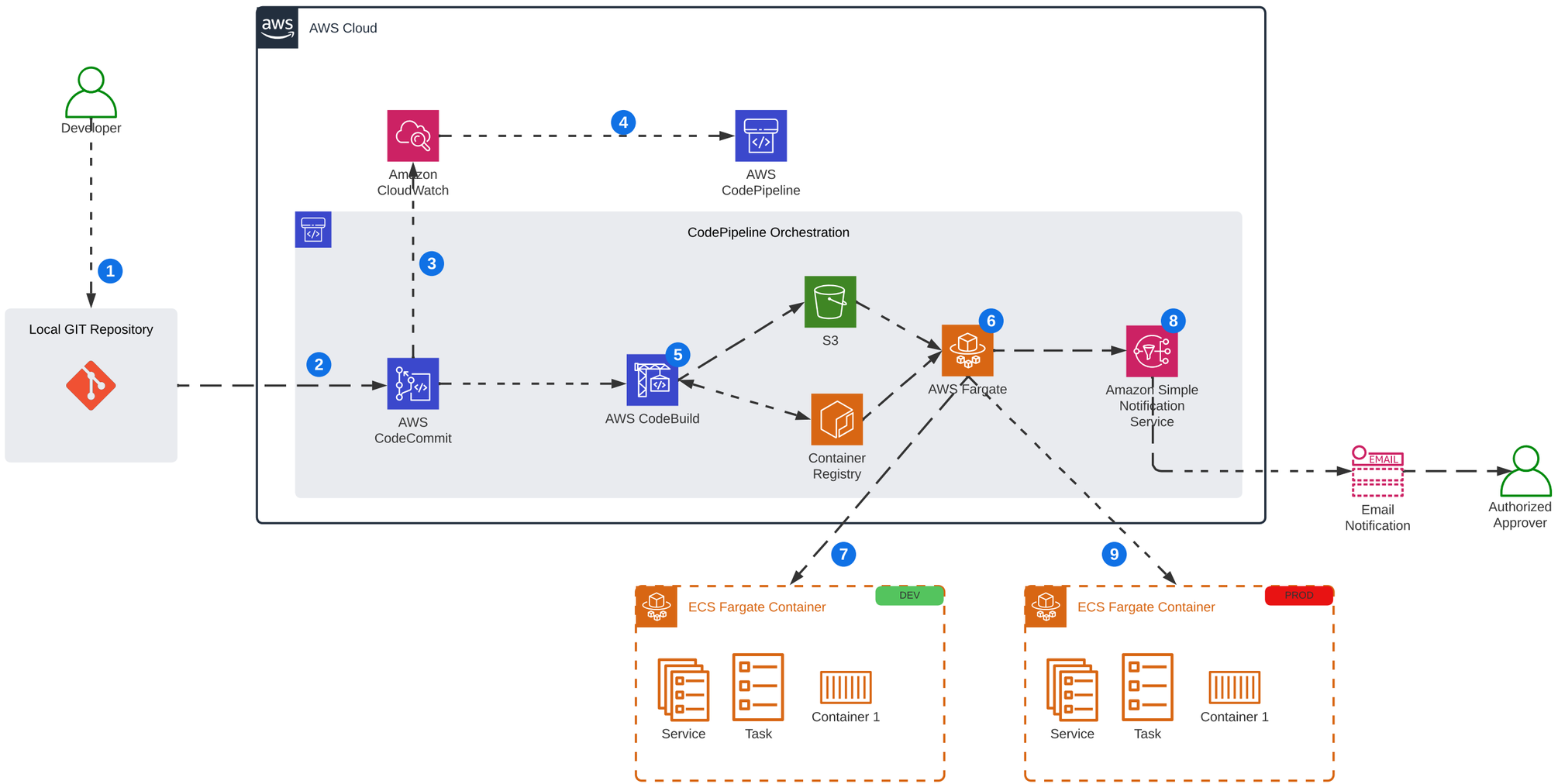
CI/CD Pipeline with AWS ECS Cluster

RichardBMk | April 22, 2023

Explain Solution



Solution walk through

1. *Developer coding and creating new features for the sofware. Every new changes is registred to the local git repository.*
2. *Code is pushed by the developer to a remote repository. AWS Codecommit in this scenario.*
3. *AWS Pipeline detects a change in the remote repository (Codecommit) via AWS CloudWatch and then triggers the Pipeline.*
4. *The pipeline is in charge of orchstrating the end-to-end flow, from the source (CodeCommit) until the final deployment of the solution with AWS Fargate and AWS SNS.*
5. *With the new code, AWS Codebuild is in charge of testing, code coverage, and build a new docker container and pushing the new code to a Container Repository and also saving any necessary artifact to S3 bucket.*
6. *In ECS Fargate, Task is updated with a new container version and deployed to the Development environment.*
7. *In this step we check if the Fargate Service is working as expected and without any bugs in the Development environment.*
8. *If the Development Service is deployed successfully, Amazon SNS send a notification to an Authorized user to allow the deployment to the Production environment.*
9. *Software is deployed to the Production environment successfully.*

The focus in this Solution is the CI/CD Pipeline. We are going to ignore the need of a ALB, AustoScaling or any other possibility for now.

Microservice deployment on AWS ECS Fargate

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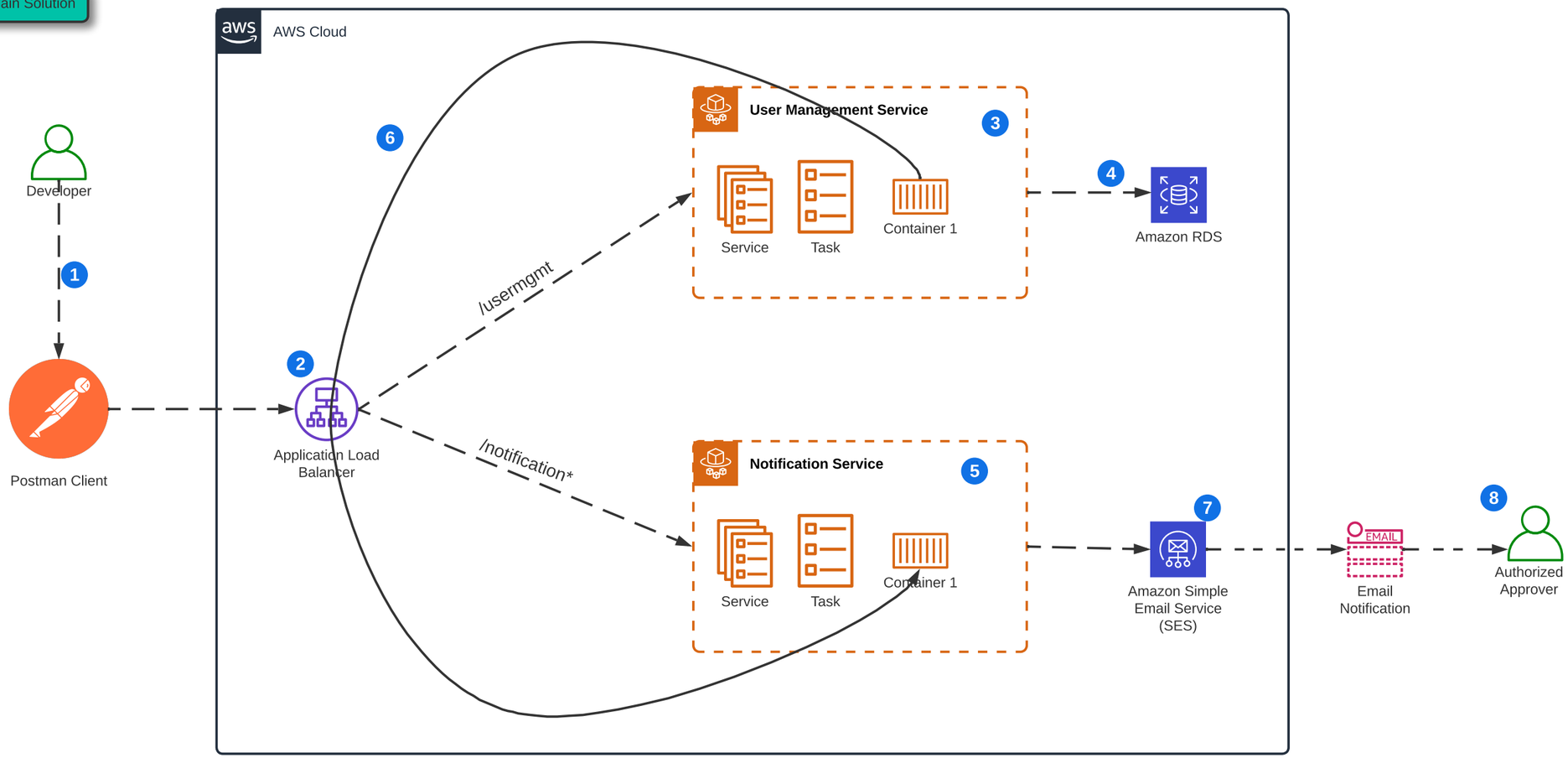
Explain Solution

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Example of ALB endpoints:
http://alb-basic-test-1565875067.us-east-1.elb.amazonaws.com/usermgmt/user
http://alb-basic-test-1565875067.us-east-1.elb.amazonaws.com//notification/send
```

Solution walk through

1. *Developer test the API endpoints using Postman. There are two enpoints one for the Management service and another for the Notificaton service.*
2. AWS ALB distribute the trafic to the different microservices.
3. *User Management Microservice with Fargate.* Service, Task and container configured with the right ports and security groups.
4. *User Management Microservice is connected to AWS RDS (Mysql) for the CRUD operations.*
5. *Notification Microservice with Fargate.* Service, Task and container configured with the right ports and security groups.
6. *The User Management Microservice comunitates to the Notification microservice using the internet via the AWS ALB Enpoint.*
7. *Notification microservice use AWS SES To send Notifications to an Authorized person.*
8. *A person developer, client, suscribed/authorized to receive the notification.*

The focus in this Solution is the Microservice Architecture using AWS ECS Fargate

Microservice deployment on AWS ECS Fargate With Service Discovery

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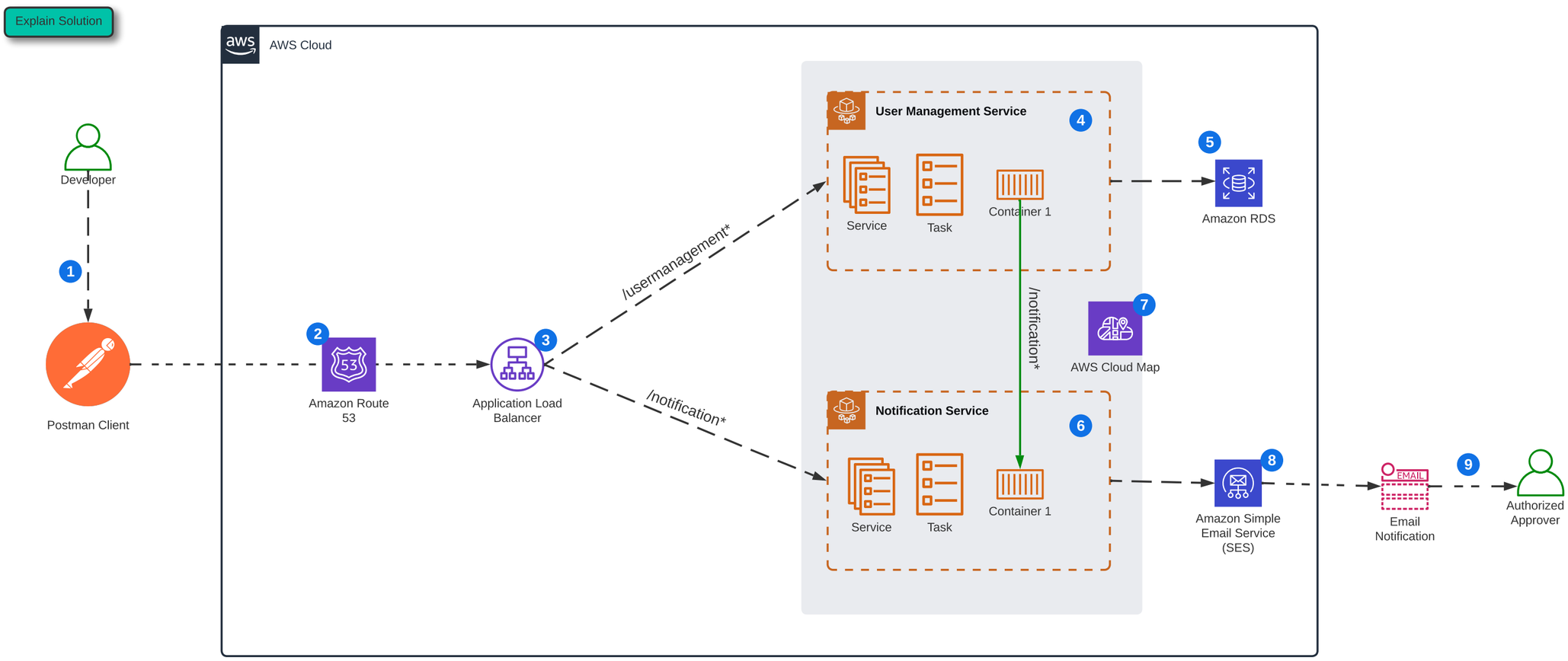
Explain Solution



Solution walk through

1 *Developer test the API endpoints using Postman. There are two enpoints one for the Management service and another for the Notificaton service.*

2 *We need AWS Route53 to create Private Hosted Zones for the DNS Resolution of the Notification Microservice.*

3 AWS ALB distribute the trafic to the different microservices.

4 *User Management Microservice with Fargate.* Service, Task and container configured with the right ports and security groups.

5 *User Management Microservice is connected to AWS RDS (Mysql) for the CRUD operations.*

6 *Notification Microservice with Fargate.* Service, Task and container configured with the right ports and security groups.

7 *AWS Cloud Map, improve the communication to the Notification Microservice (Direct and private comunication)*

7.1 *These are details of how AWS Cloud Map is configured to the job as a Service Discovery.*

8 *Notification microservice use AWS SES To send Notifications to an Authorized person.*

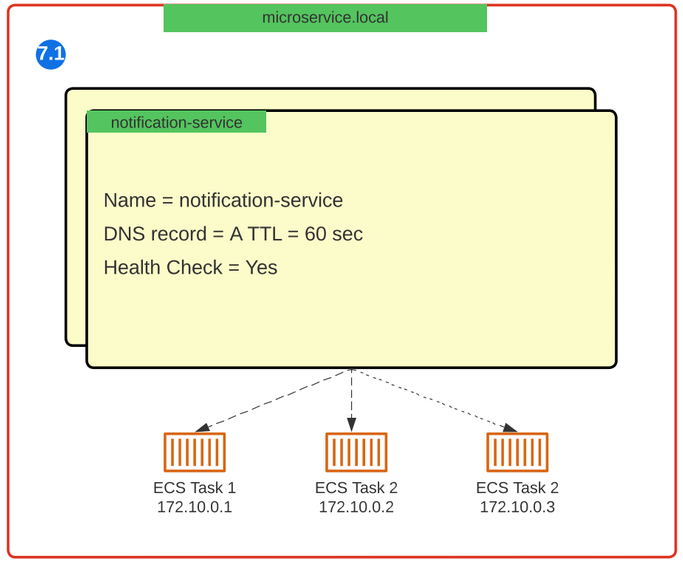
9 *A person developer, client, suscribed/authorized to receive the notification.*

The focus in this Solution is the Microservice Architecture using AWS ECS Fargate, AWS Route 53 and AWS Cloud Map as a Service descovery tool.

AWS Cloud Map Registry

Service Discovery Pattern:
- Client-side service discoverypattern
- Server-side service discoverypattern

- Namespace
- Service
- Service Instance



Microservice deployment with AWS AppMesh on AWS ECS

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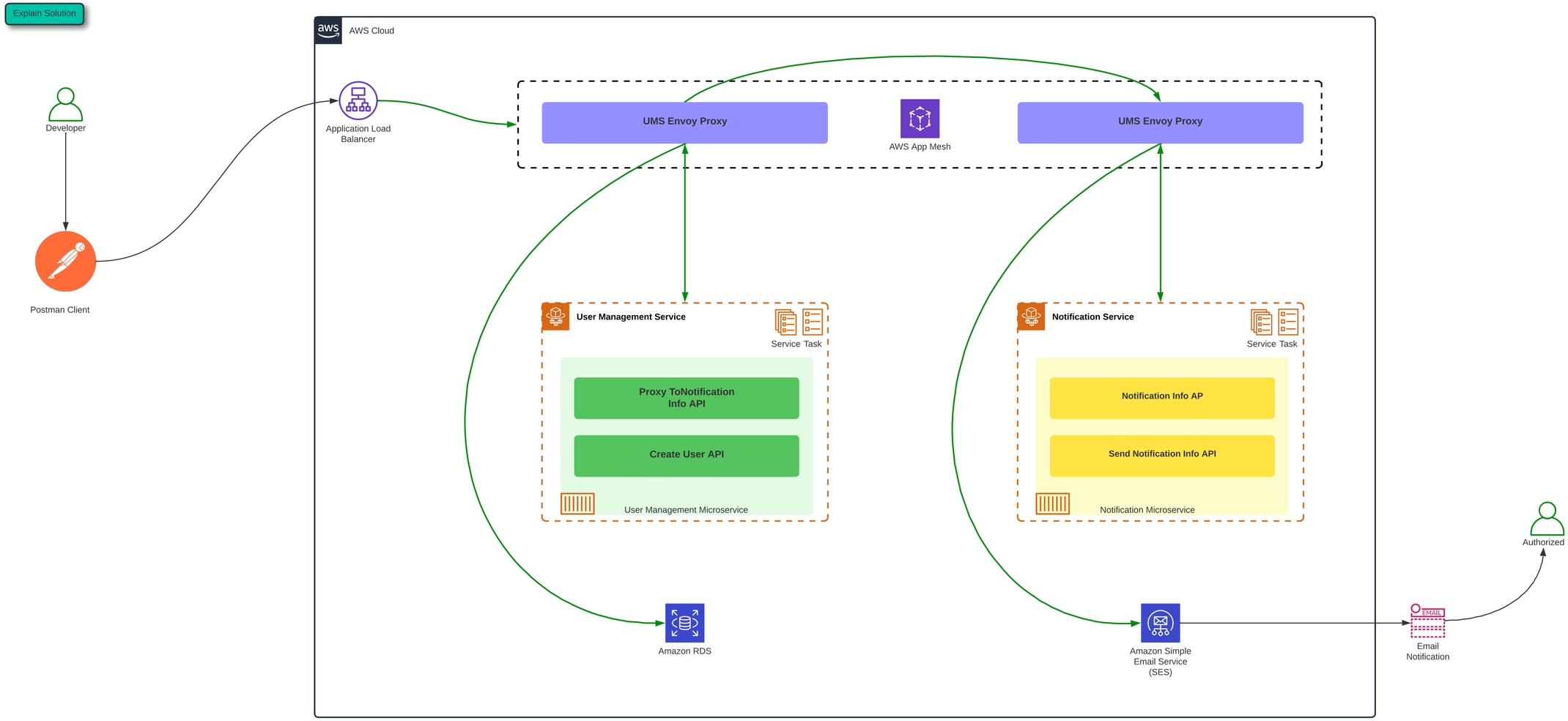

Microservice deployment with Canary Deployments with AppMesh on AWS ECS

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