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AWS Project Documentation

S3 File Upload Notification System

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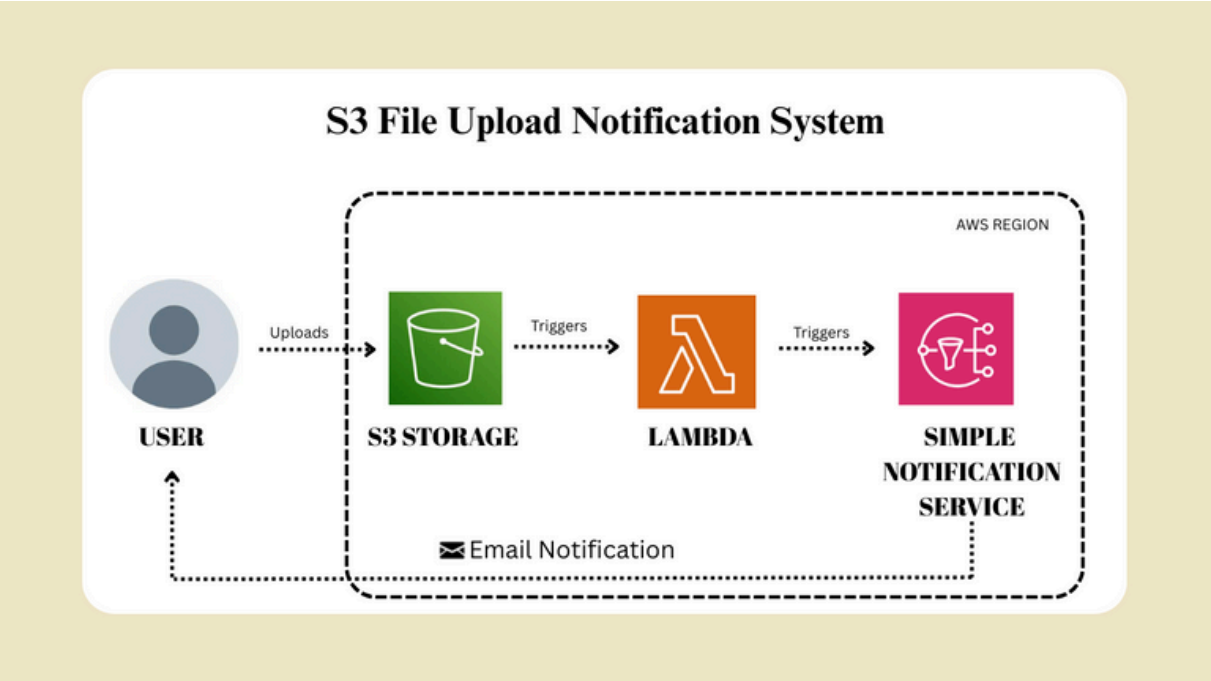
ARCHITECTURE DIAGRAM :



S3 File Upload Notification System Architecture

- The user uploads a file to Amazon S3, a secure storage service.
- S3 triggers an AWS Lambda function when a new file is uploaded.
- Lambda processes the event and sends a notification to Amazon SNS.
- SNS delivers an email notification to subscribed users.
- This system is useful for automated workflows, security alerts, and file tracking. 🚀

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This Step by Step guide will help you set up an S3 File Upload Notification System using AWS Lambda and SNS.

Uses of the S3 File Upload Notification System

1. Real-time File Upload Alerts
   - Sends instant notifications when a new file is uploaded to S3.
2. Automated Workflows
   - Triggers additional processing like data validation, logging, or backup.
3. Security Monitoring
   - Alerts on unauthorized file uploads to detect potential security breaches.

AWS Services Used in the Project

1. Amazon S3 (Simple Storage Service)
   - Stores uploaded files and triggers an event when a new file is added.
2. AWS Lambda
   - A serverless compute service that processes the S3 event and forwards it to SNS.
3. Amazon SNS (Simple Notification Service)
   - Delivers email notifications when a file is uploaded.
4. AWS IAM (Identity and Access Management)
   - Manages permissions and security roles for Lambda, S3, and SNS access.

Step-by-Step Guide:

Step 1: Create an S3 Bucket and Configure Event Notifications

1. Open the AWS Management Console and go to S3.
2. Click Create bucket, enter a unique bucket name, select a region, and click Create.
3. Open the bucket, go to the Properties tab, and find Event Notifications.
4. Click Create event notification, name it S3FileUploadEvent.
5. Set Event type as PUT (to trigger on file uploads).
6. In the Destination, select Lambda Function (you will add the Lambda later).
7. Click Save changes.

Step 2: Create an SNS Topic and Email Subscription

1. Open the AWS SNS Console → Click Create Topic.
2. Choose Standard topic, name it S3FileUploadTopic, and click Create topic.
3. Copy the Topic ARN (you will need it later).
4. Click Create Subscription, choose:
    - Protocol → Email
    - Endpoint → Your email address
5. Click Create Subscription, then confirm the email you receive.

Step 3: Create an IAM Role for Lambda

1. Open the IAM Console → Go to Roles → Click Create Role.
2. Choose AWS Service → Select Lambda → Click Next.
3. Attach policies:
   - AmazonS3ReadOnlyAccess (to read S3 objects)
   - AmazonSNSFullAccess (to publish messages to SNS)
   - AWSLambdaBasicExecutionRole (for Lambda logs)
4. Click Next, name it Lambda_S3_SNS_Role, and create the role.

Step 4: Create a Lambda Function

1. Open the AWS Lambda Console → Click Create Function.
2. Choose Author from scratch, enter:
   - Function name → S3FileUploadLambda
   - Runtime → Python 3.x
   - Execution role → Choose existing role (Lambda_S3_SNS_Role)
3. Click Create function.
4. In the Code source, replace the default code.

🔹 Replace REGION and ARN with your AWS details.

1. Click Deploy.

Step 5: Add Lambda as an S3 Event Notification

1. Open the S3 Console → Select your bucket.
2. Go to Properties → Event Notifications → Edit the existing event.
3. In Destination, select Lambda function → Choose S3FileUploadLambda.
4. Click Save changes.

Step 6: Test the System

1. Upload a file to your S3 bucket.
2. Check your email for the SNS file upload notification.
3. Verify the Lambda logs in Amazon CloudWatch for debugging.

Conclusion

You have successfully implemented an S3 File Upload Notification System using AWS Lambda and SNS. 🚀

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SAMPLE OUTPUT :