
AWS
re:Invent
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STG309-R

Using code and AWS Lambda to process data retrieved from Amazon S3

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Agenda

Amazon S3 Object Lambda overview

Do-it-yourself with AWS Lambda and Amazon S3

Transforming objects with S3 Object Lambda

Case study – Redacting PII data as it is requested

S3 Object Lambda in action – Demo time!

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Amazon S3 Object Lambda



Add your own code to standard S3 GET, HEAD, and LIST requests to process and modify data returned to an application

Fully managed, powered by AWS Lambda functions

Eliminates the need to create and store derivative copies of your data or manage a proxy, and requires no application changes

aws

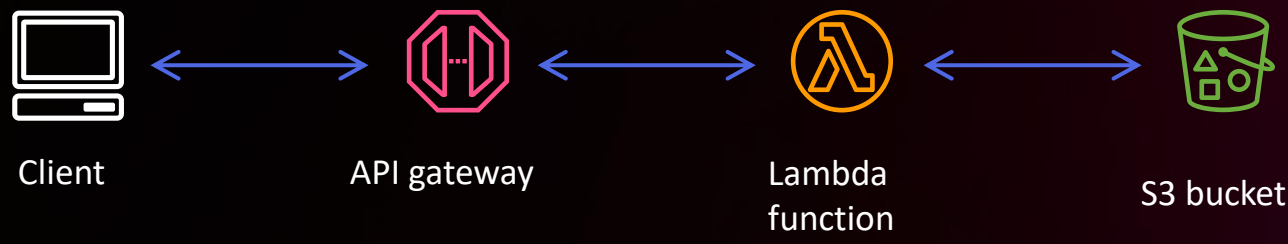
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Do-it-yourself with AWS Lambda and Amazon S3

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Create a video processing workflow

Return different video lengths based on client device



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Build your own API

Build an API to retrieve objects from Amazon S3

```
/get-video
        ?range=1-1000
        &decrypt=true
```

Reinvent the S3 GetObject API

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Build your own client

Add custom capabilities to an HTTPS client

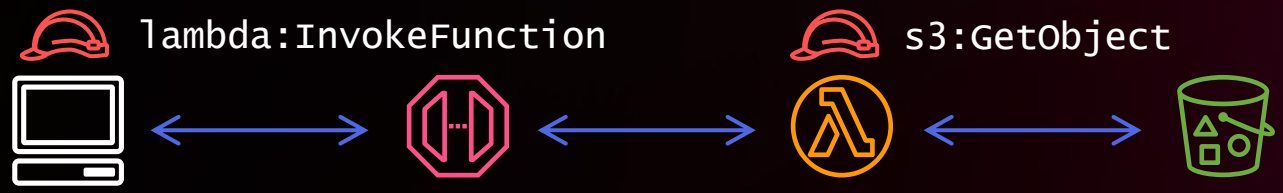
- AWS Sigv4 signing
- Client-side encryption

Reinvent the AWS SDK

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Set up IAM permissions

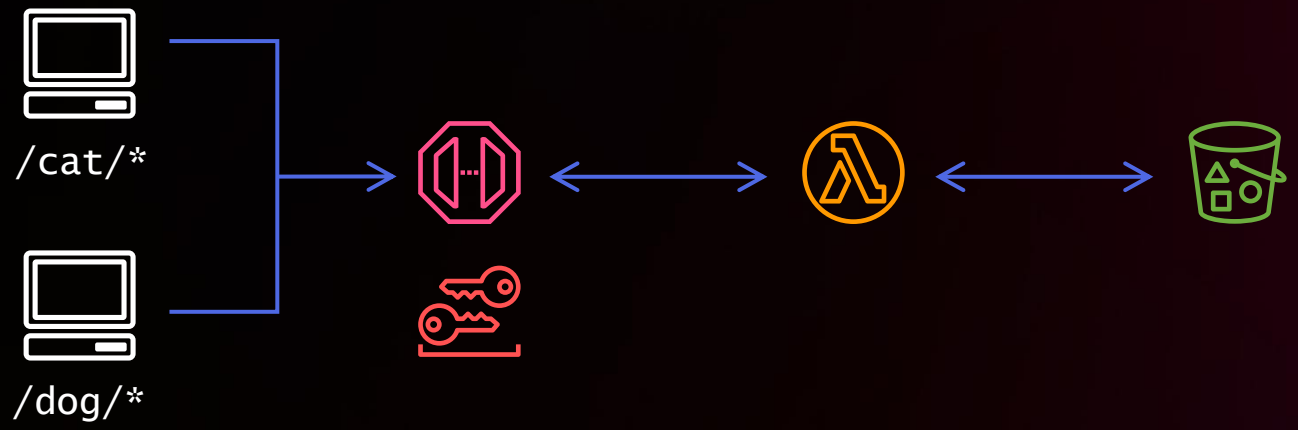
Grant permissions to retrieve objects from Amazon S3



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Managing access for multiple applications

Create your own access management for Amazon S3



Reinvent S3 Access Points

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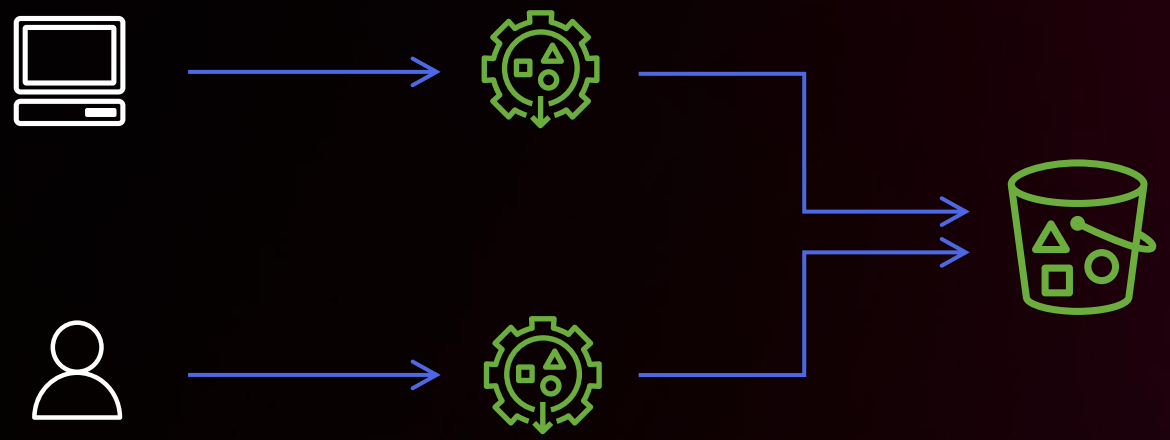
Transforming objects with S3 Object Lambda

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Amazon S3 Object Lambda Access Points

Transform objects as they are retrieved from Amazon S3 Access Points

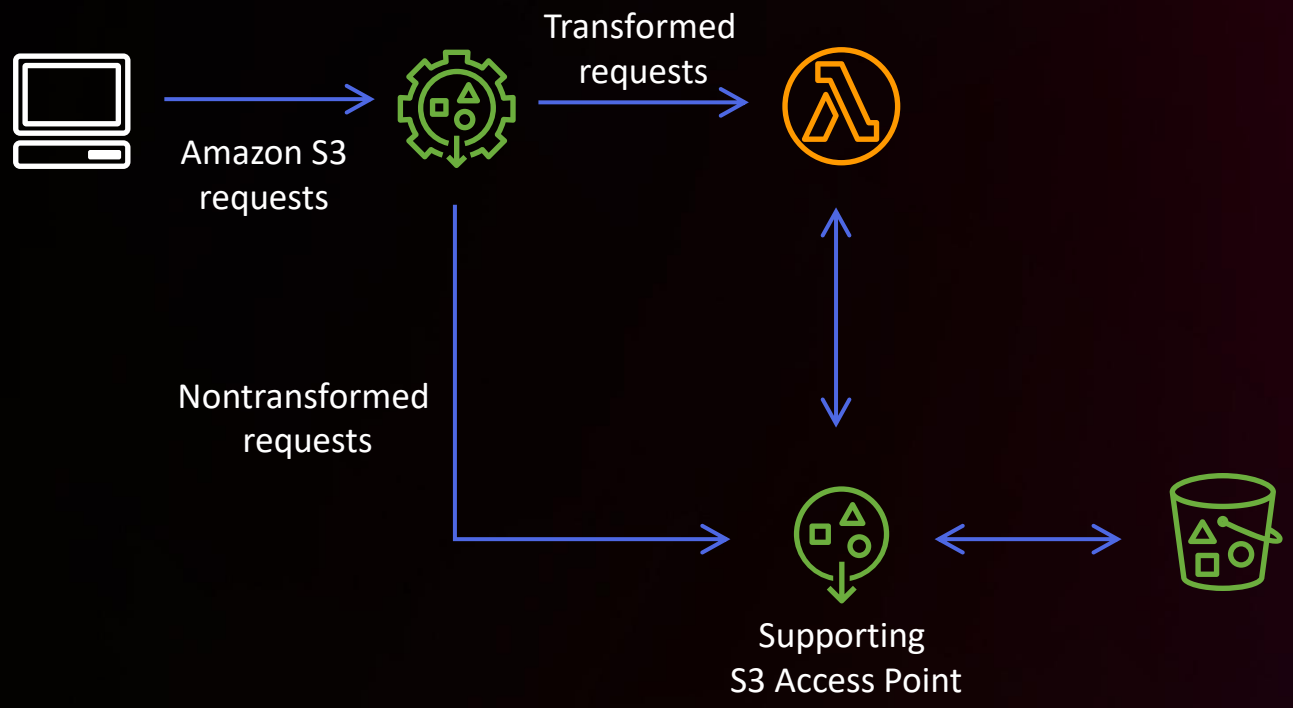
Eliminates the need to store derivative copies of your data



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How S3 Object Lambda works

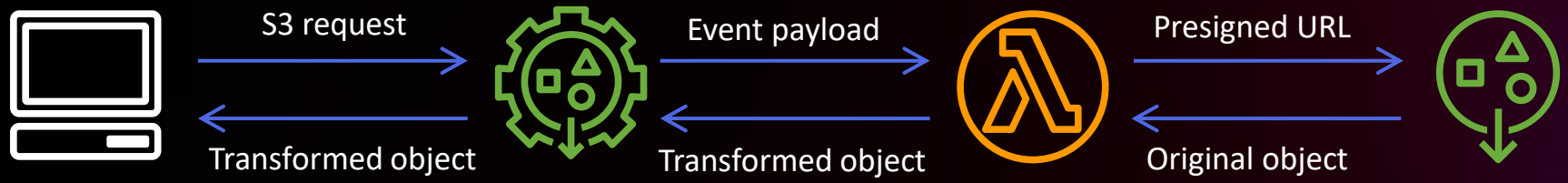
Use your AWS Lambda function to transform objects



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Transformed requests

Synchronously invokes Lambda function on S3 requests



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Nontransformed requests

Forwarded to your Amazon S3 Access Point



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Using S3 Object Lambda in your applications

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Getting started with Amazon S3 Object Lambda



STEP 1
Create an Amazon S3 Access Point



STEP 2
Create a Lambda function



STEP 3
Create an Amazon S3 Object Lambda Access Point



STEP 4
Update application

Insert your own code to process data as it is retrieved from Amazon S3

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Build your Lambda function

```
import S3 from 'aws-sdk/clients/s3';
const S3Client = new S3();

export async function handler(event: S3ObjectLambdaEvent) {
  const objectResponse = await fetch(event.getObjectContext.inputS3Url);
  const originalObject = await objectResponse.buffer();

  const transformedObject = transformObject(originalObject);

  await s3Client.writeGetObjectResponse({
    RequestRoute: event.getObjectContext.outputRoute,
    RequestToken: event.getObjectContext.outputToken,
    Body: transformedObject
  });

}
```

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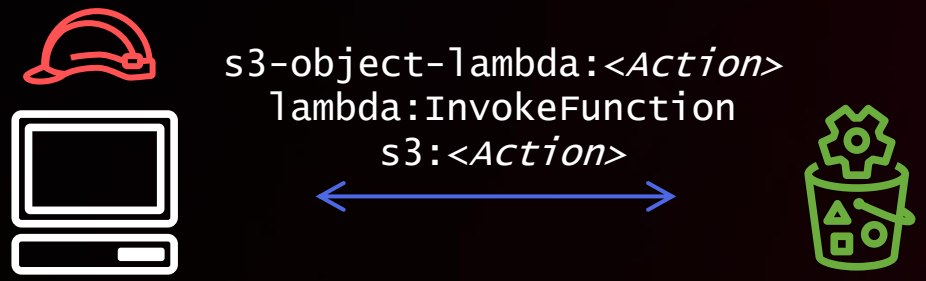
Object Lambda event payload

```
{
    "xAmzRequestId": "1a5ed718-5f53-471d-b6fe-5cf62d88d02a”,
    "getObjectContext": {
        "inputS3Url": "https://myap-123412341234.s3-accesspoint...",
        "outputRoute": "io-cell001",
        "outputToken": "...”
    },
    "configuration": { ... },
    "userRequest": {
        "url": "/s3.txt",
        "headers": { ... }
    },
    "userIdentity": { ... }
}
```

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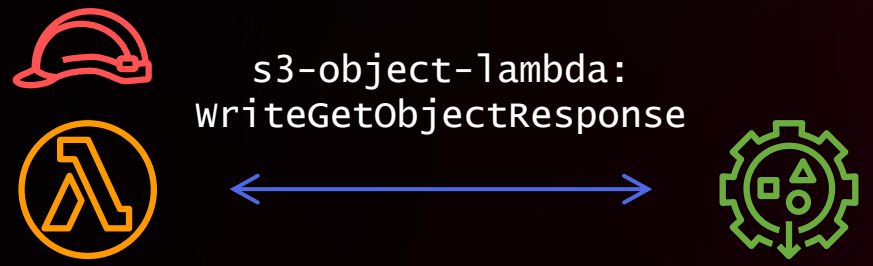
IAM permissions – Client application

Uses the requester's identity to access resources



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IAM permissions – Lambda function



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Build your Lambda function – Head object

```
export async function handler(event: S3ObjectLambdaEvent) {
  const headResponse = await head(event.headObjectContext.inputS3Url);

  // Compute new values for Head Object

  return {
    "statusCode": 200;
    ”headers": {
       ”Content-Length”: contentLength;
       “ETag”: eTag;
       “x-amz-version-id”: versionId;

       //... More!
    };
  }
```

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Build your Lambda function – List objects

```
export async function handler(event: S3ObjectLambdaEvent) {
  const listResponse = await fetch(event.listObjectsContext.inputS3Url);
  const originalList = await originalList.buffer();

  const transformedList = transformList(originalList);

  return {
    "statusCode": 200;
    "listResultXml": transformedList;
  }
}
```

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Create your Object Lambda Access Point

Use AWS CLI, S3 console, AWS CloudFormation, or AWS CDK

```
aws s3control create-access-point-for-object-lambda --account-id <value> --name
<value> --configuration <value>
```

Configure your Lambda function and supporting Access Point

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Update your client application

Use the Object Lambda Access Point ARN

Upgrade your AWS SDK to support ARN format

```
import S3 from 'aws-sdk/clients/s3';
const S3Client = new S3();

await S3Client.getObject({
  Bucket: 'my-bucket-name',
  Key: 'my-object-key'
}).promise().then(…)
```

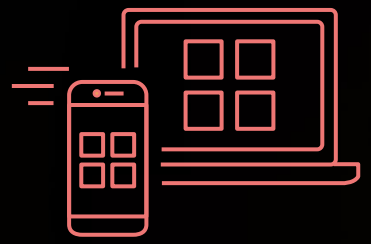
```
import S3 from 'aws-sdk/clients/s3';
const S3Client = new S3();

await S3Client.getObject({
  Bucket: 'my-ol-ap-arn',
  Key: 'my-object-key'
}).promise().then(…)
```

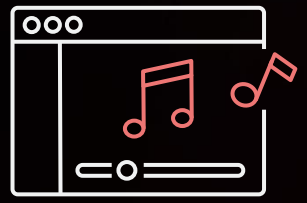
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Use cases for Amazon S3 Object Lambda



Compression and decompression



Audio and video transcoding



Custom authorization

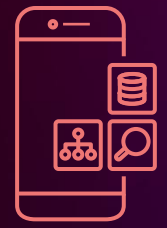


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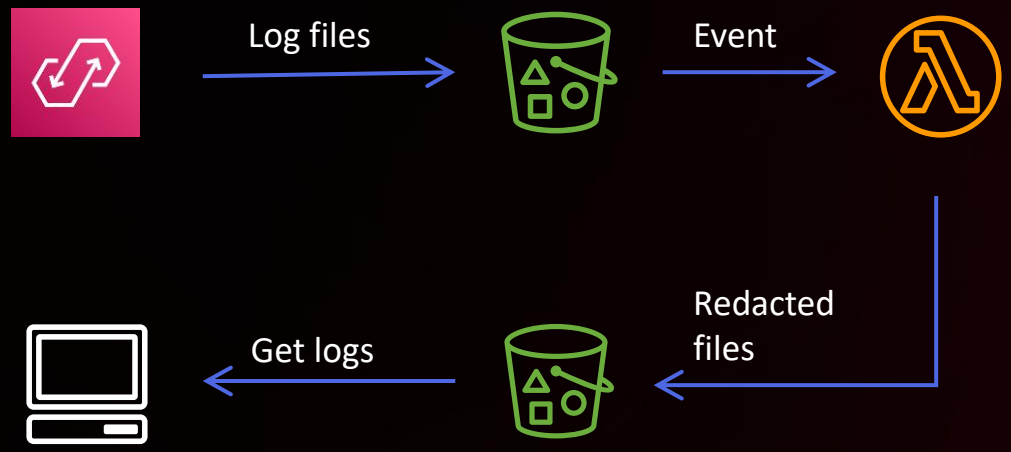
Case study – Redacting PII data as it is requested

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PII redaction workflow – Do-it-yourself

Create an object copy without personally identifiable information (PII)

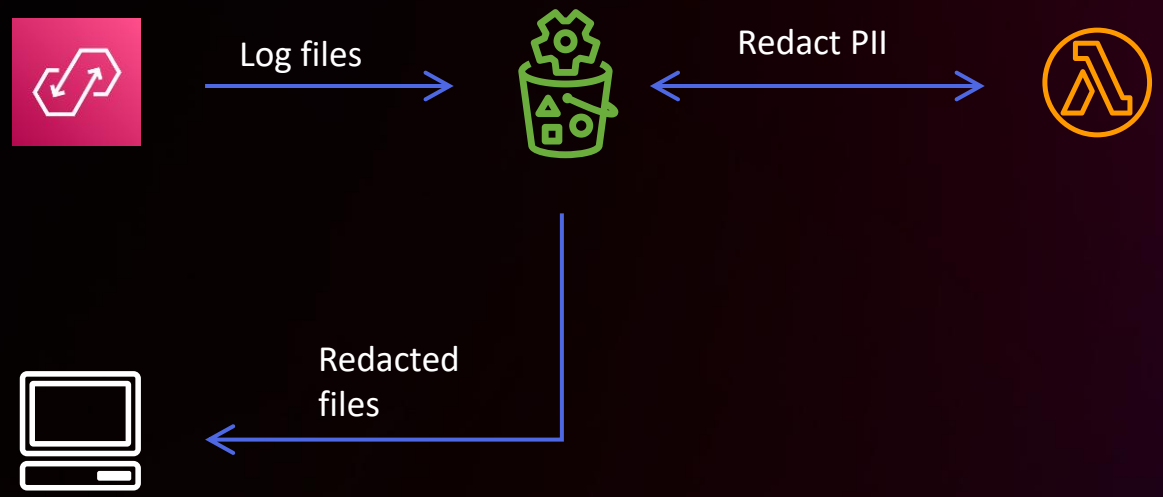
Upload redacted objects for consumers



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PII redaction with S3 Object Lambda

Redact PII on demand



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When to use S3 Object Lambda

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When to use S3 Object Lambda

Proactive rather than reactive transformation workflows

Transformation model changes frequently

Closely integrated with Amazon S3 APIs

Easily change client applications

Retain your audit and compliance capabilities

Block Public Access automatically enabled

Authorize against the s3-object-lambda service name

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Latency and performance

Is your transformation fast enough for your application?

- Up to 60 seconds to stream a complete response to its caller

Optimize your Lambda function

- Choose the right memory configuration
- Use provisioned concurrency

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S3 Object Lambda in action – Demo time!

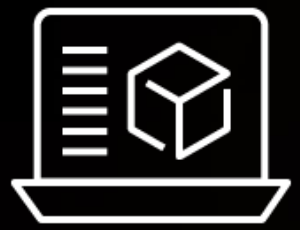
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Questions?

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