AWS re:Invent

SVS222-R2

Streamline AWS Lambda development with Lambda layers

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AWS re:Invent

aws

Agenda

Introduction

AWS Lambda layers

Use cases & deep dive

Hands-on labs

Related breakouts

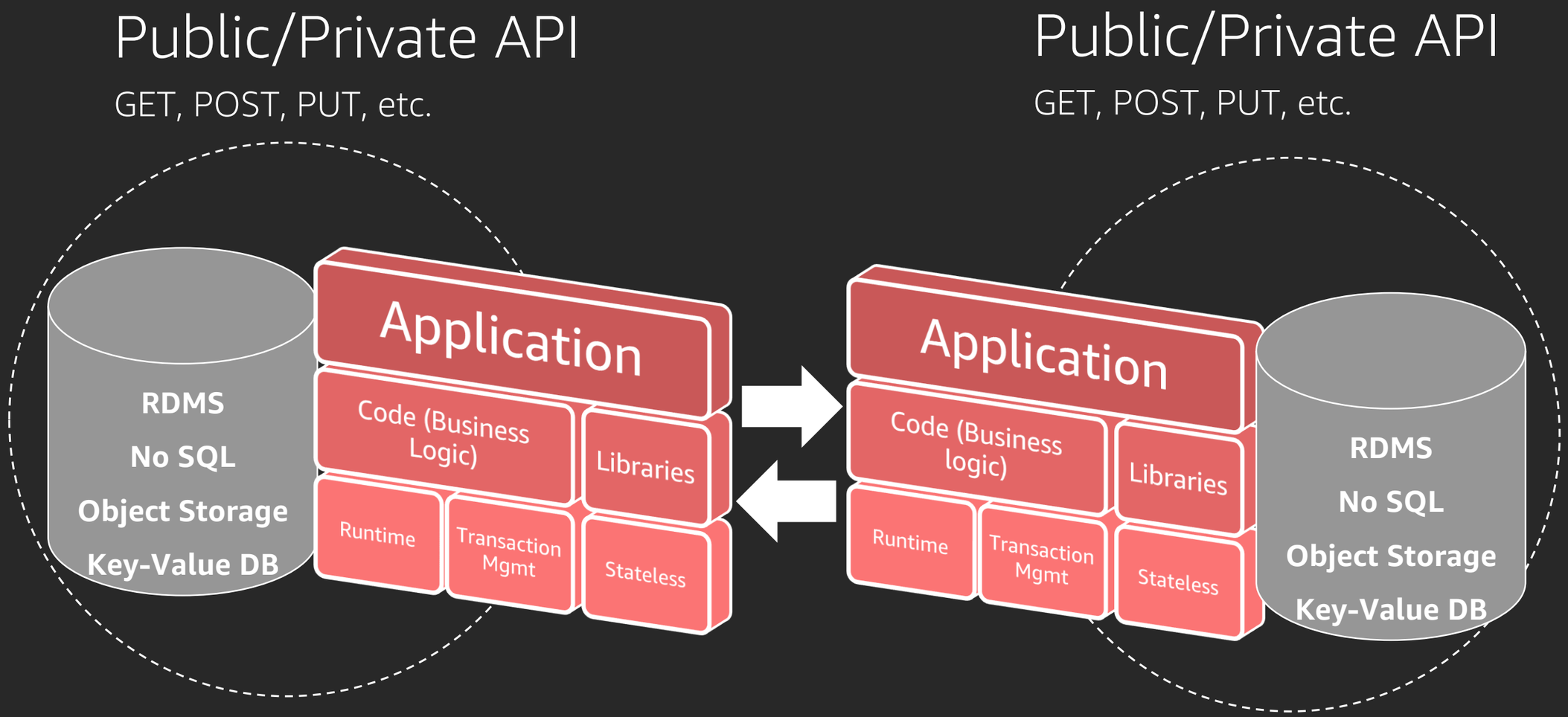
[SVS222-R2] [Streamline Lambda development with Lambda layers]

[SVS405-R1] [A serverless journey: AWS Lambda under the hood]

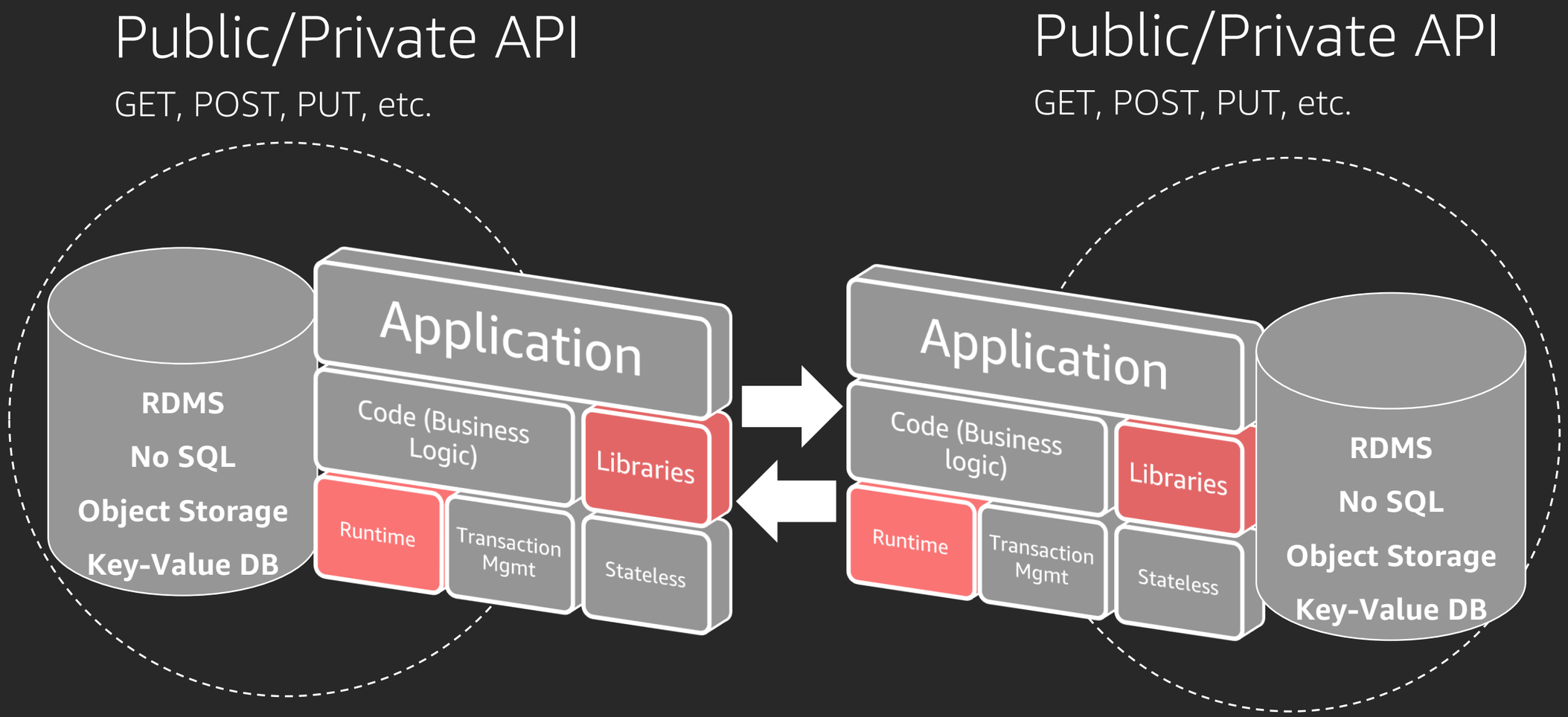
[SVS402-R1] [Building APIs from front to back]

Introduction

Microservices



Microservices



AWS Lambda layers

AWS Lambda layers

Packaged as zip archived

Can be used for sharing dependencies, configurations and custom runtimes

Reduces deployment package size

Resource-based policies for granting access

AWS Lambda layers

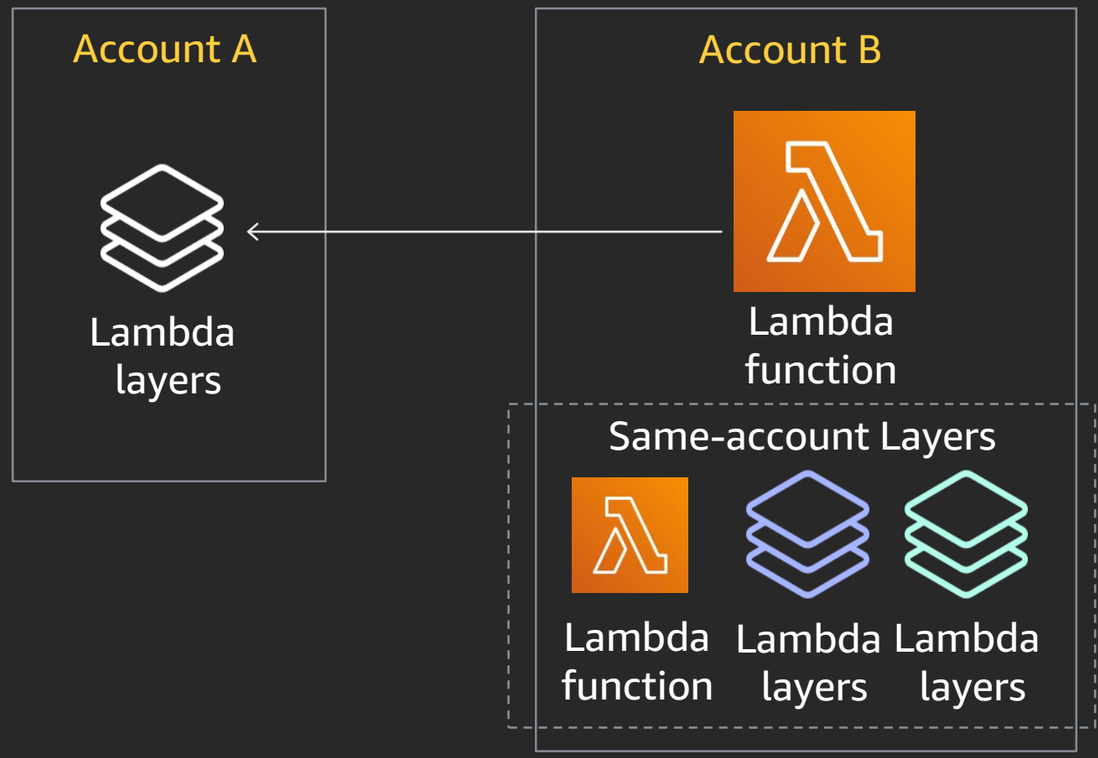
Use cases & deep dive

AWS Lambda layers use cases

Custom code that is used by multiple functions, partner libraries, etc.

Shared code that doesn't change frequently

Layers can be shared across accounts, publicly with any account and all accounts within an AWS Organizations



AWS Lambda layers deep dive

Immutable and can be versioned to manage updates

Lambda layers

arn:aws:lambda:region:accountId:layer:shared-lib:3

arn:aws:lambda:region:accountId:layer:shared-lib:2

arn:aws:lambda:region:accountId:layer:shared-lib

Layers are installed in the execution environment in the order you provided

Up to 5 layers (including versions)

AWS Lambda layers pattern and antipatterns

Patterns

Operating System dependent libraries: build once, use everywhere

Share Application Configuration

Share standard business logic across microservices

Observability tool libraries provided by New Relic, Datadog, etc.

Antipatterns

Frequently changing application dependencies

Multiple runtime environments or environment versions

AWS Lambda layers SAM support

New AWS::Serverless::LayerVersion resource creates new Lambda layer from local filesystem or Amazon S3 URI

Layers can also be restricted to certain runtimes (CompatibleRuntimes property)

SAM CLI 0.8.1+ supports layers locally and remotely (ARN)

```
HelloBashFunction:
    Type: AWS::Serverless::Function
    Properties:
        CodeUri: bash_hello
        Handler: hello.handler
        Runtime: provided
        Layers:
            - !Ref BashRuntime
            - <LayerTwoArn>
```

```
BashRuntime:
    Type: AWS::Serverless::LayerVersion
    Properties:
        LayerName: bash-sam
        Description: Bash Runtime FWIW
        ContentUri: bash_runtime
        LicenseInfo: 'MIT-0 license’
        RetentionPolicy: Retain
        CompatibleRuntimes: [List]
```

AWS Lambda layers custom runtime

Custom runtime layer must include an executable file called **bootstrap**

Bootstrap needs to manage response/error handling, context creation, and function execution

Information on the interface endpoint and the function handler are shared as environment variables

Custom Runtime (Bring your own runtime)

Node.js

Java

Go

.NET

Ruby

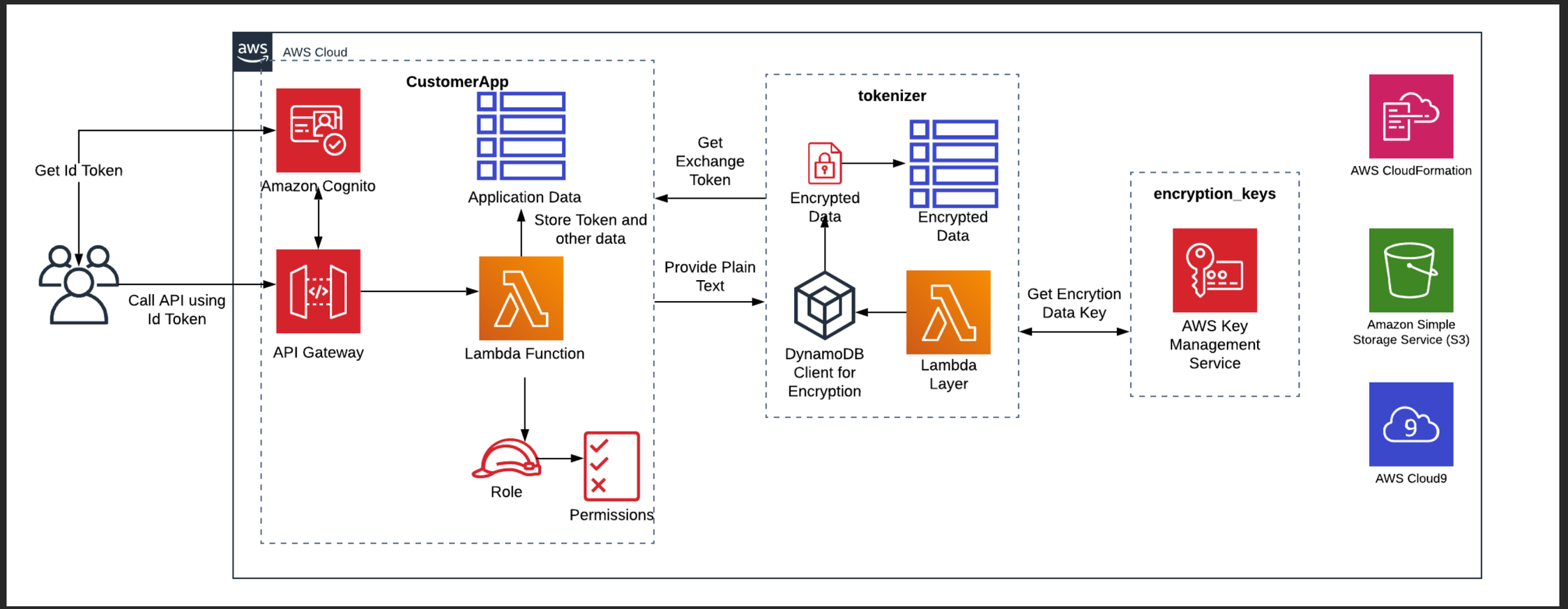
Python

Hands-on labs

Lab Guide

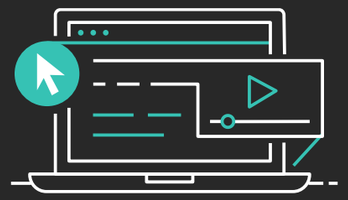
http://bit.ly/lambdalayer

Lab use case architecture



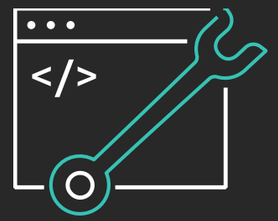
Learn serverless with AWS Training and Certification

Resources created by the experts at AWS to help you learn modern application development



Free, on-demand courses on serverless, including

- Introduction to Serverless Development
- Getting into the Serverless Mindset
- AWS Lambda Foundations
- Amazon API Gateway for Serverless Applications
- Amazon DynamoDB for Serverless Architectures



Additional digital and classroom trainings cover modern application development and computing

Visit the Learning Library at https://aws.training

aws training and certification

Thank you!

Anuj Gupta

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Appendix

AWS Lambda layers library dependency path

Runtime	Folders
Node.js	nodejs/node_modules nodejs/node8/node_modules (NODE_PATH)
Python	python python/lib/python3.7/site-packages (site directories)
Java	java/lib (CLASSPATH)
Ruby	ruby/gems/2.5.0 (GEM_PATH) ruby/lib (RUBY_LIB)
All	bin (PATH) lib (LD_LIBRARY_PATH)

AWS Lambda library loading

Lambda function

Lambda built-in libraries

Lambda layers

Environment Variables

You can change this order by overriding the runtime-specific path environment libraries

For instance you can load contents of layers before Lambda built-in libraries if you override LD_LIBRARY_PATH