

AWS  
re:Invent

**SVS326-R**

# Pipelining AWS Lambda asynchronous invocations

## **DJ Carroll**

Senior Software Engineer, AWS Lambda  
Amazon Web Services

## **Rory Jacob**

Senior Software Engineer, AWS Lambda  
Amazon Web Services

# Agenda

Managing event invoke states

Managing event invoke states with event destinations

Q&A

# Related breakouts

**SVS323** Mastering AWS Lambda streaming event sources

**SVS406** Asynchronous-processing best practices with AWS Lambda

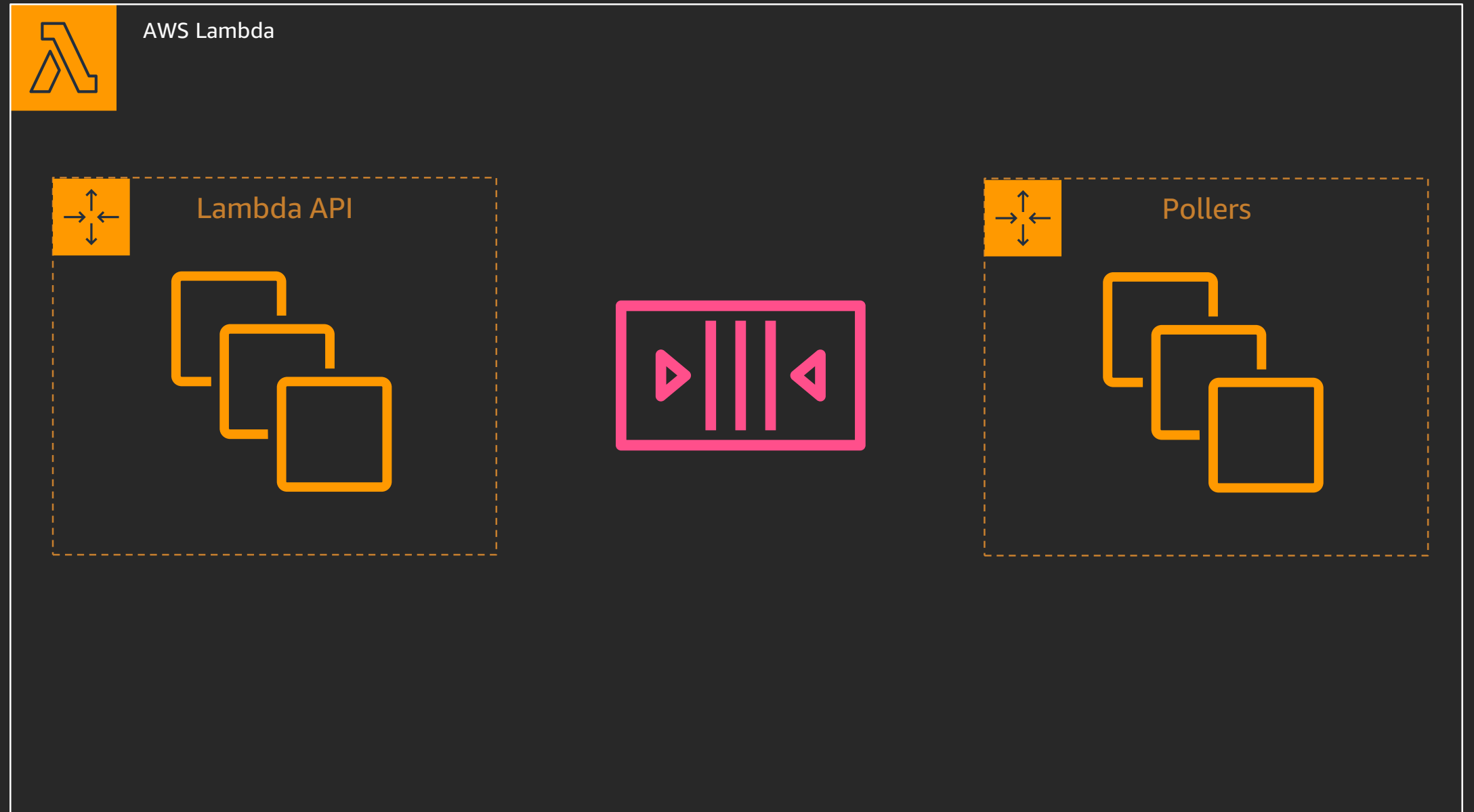
**SVS308** Moving to event-driven architectures

# Managing event invoke states

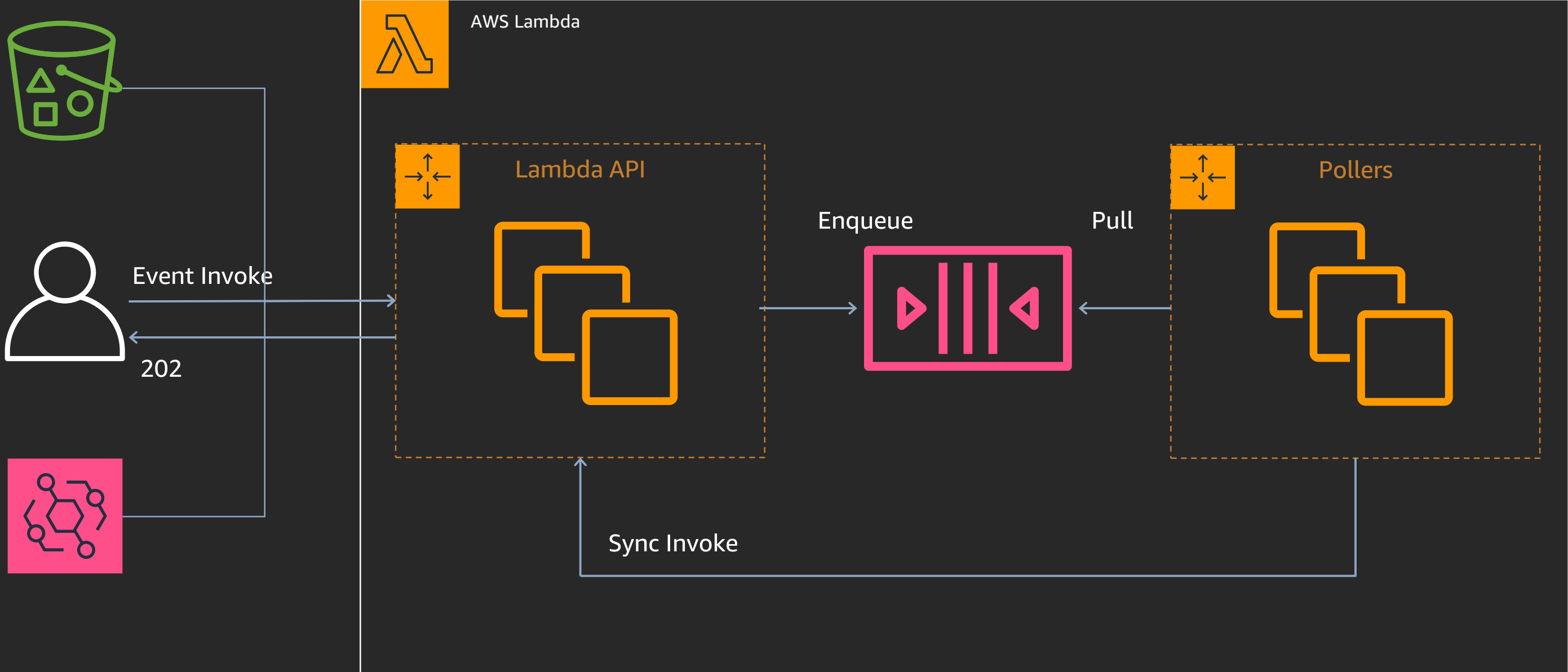
# Managing event invoke states



# Managing event invoke states



# Managing event invoke states

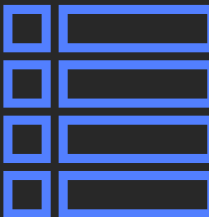




# Managing event invoke states - Success



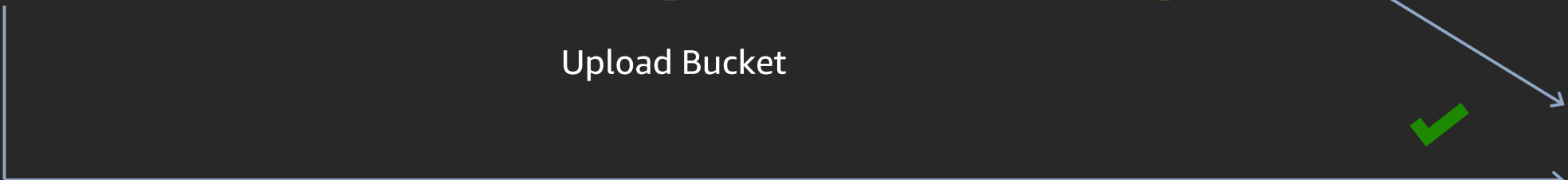
Upload Bucket



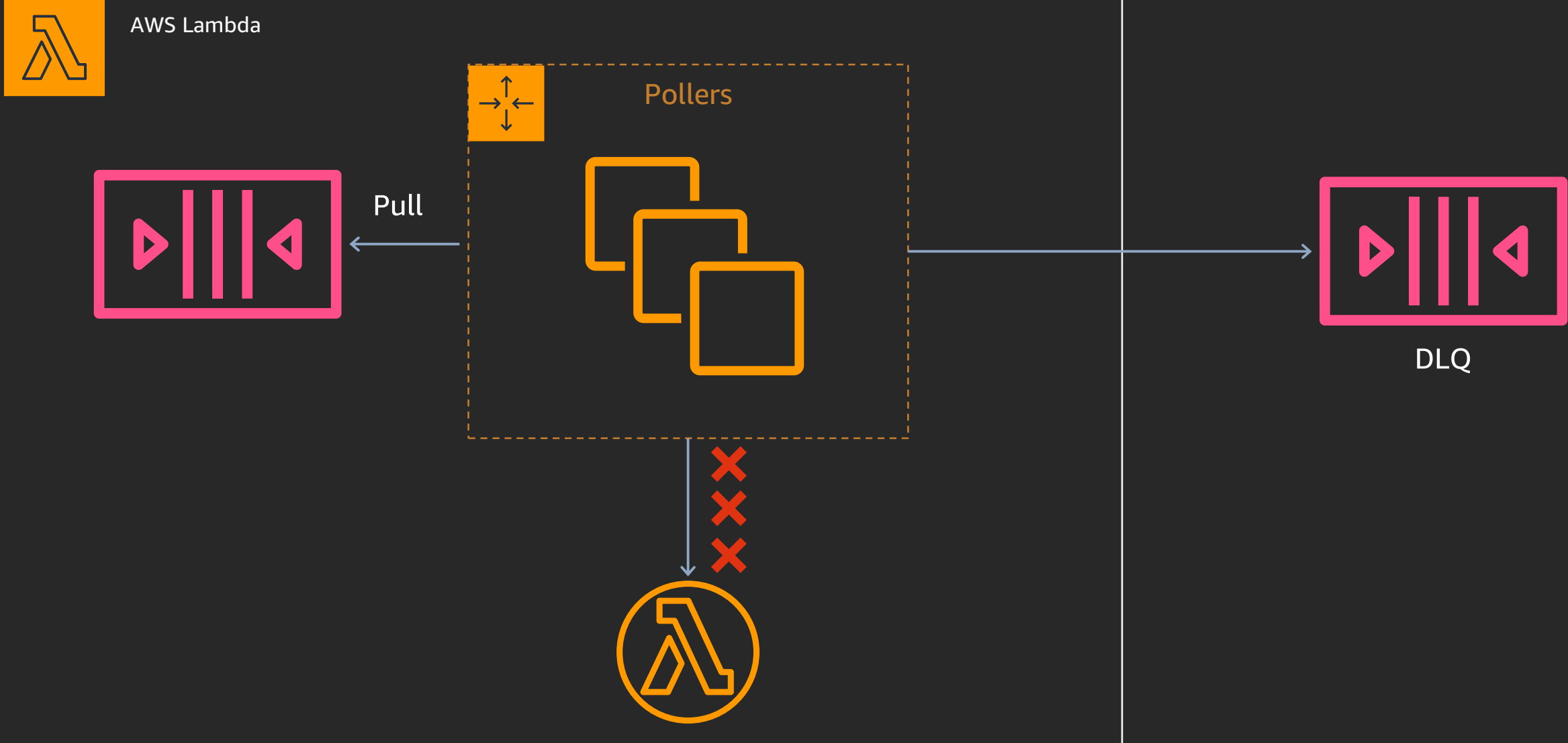
Process Table



Audit Log Bucket



# Managing event invoke states – Failures (DLQ)

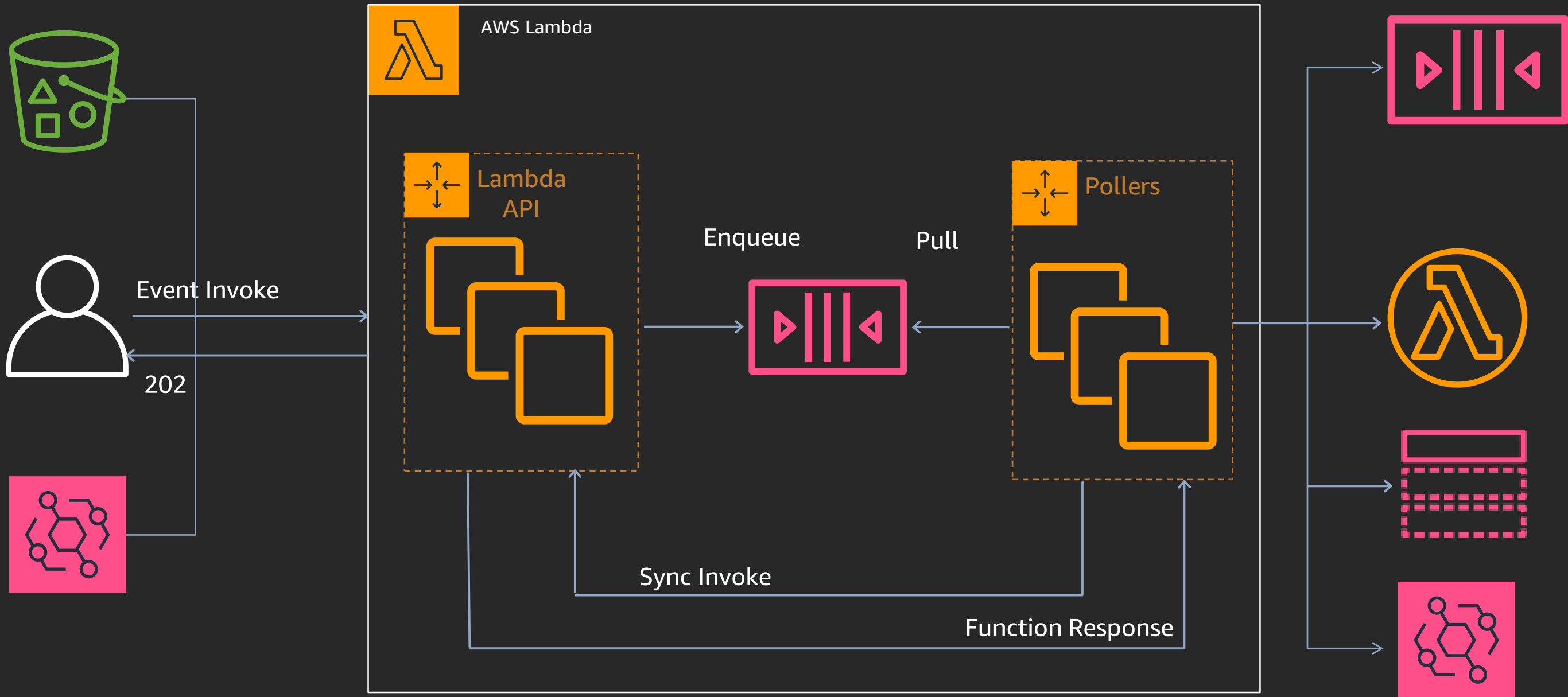


# Managing event invoke states with event destinations

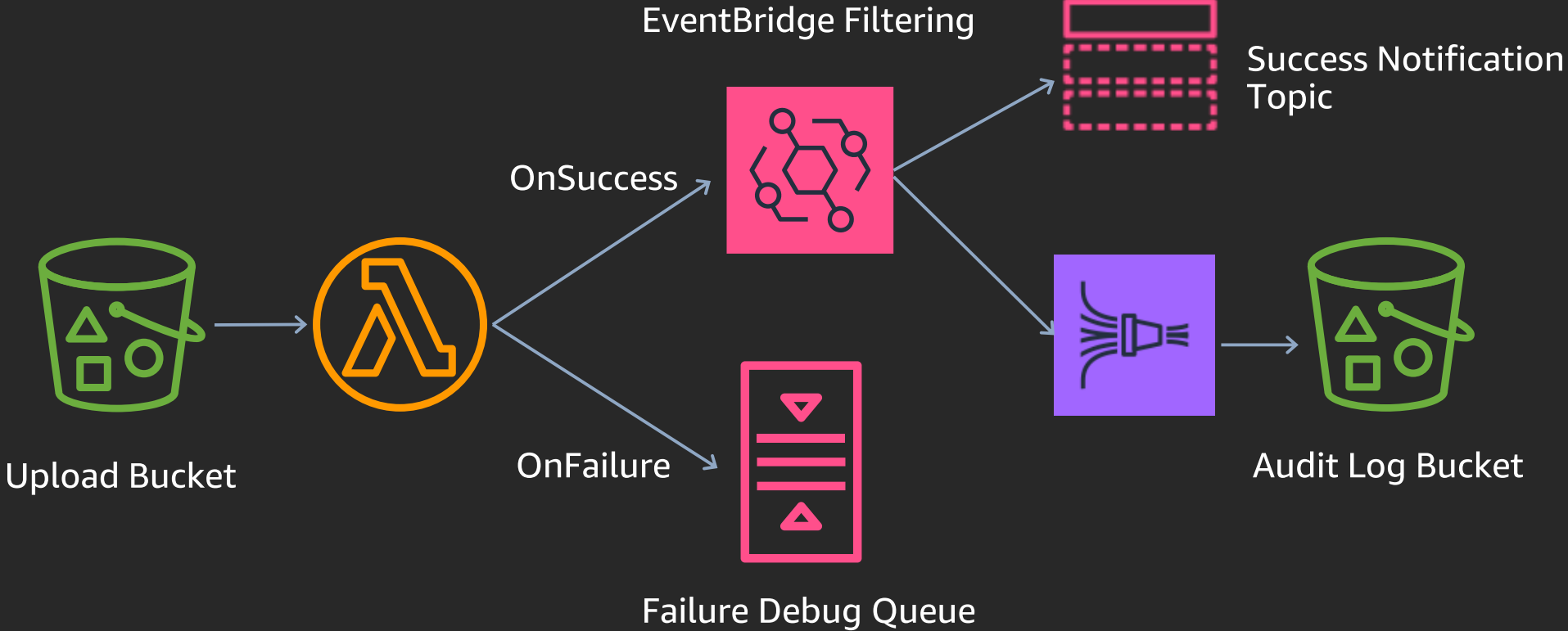
# Managing event invoke states - Event destinations

- No routing or retry code in lambda functions
- We handle the delivery to your downstream destination and manage retries and destination-specific formatting
- Destination conditions
  - OnSuccess
  - OnFailure
- Supported destinations
  - AWS Lambda (asynchronous invokes)
  - Amazon EventBridge (custom and default event buses)
  - Amazon Simple Notification Service (Amazon SNS)
  - Amazon Simple Queue Service (Amazon SQS) (standard queues)

# Managing event invoke states - Event Destinations



# Managing event invoke states



# Smarter failure handling

- Get metadata associated with your failed invoke
  - RetriesExhausted & EventAgeExceeded
  - Approximate invoke count
  - Executed function version (You're using aliases and versions, right!?)
  - Actual function error response (plus stack trace)
- Send your failed invokes to a debug queue for closer inspection
- Or send as a text, email, or Amazon CloudWatch alarm via Simple Notification Service (Amazon SNS)

# How to configure

- Use new APIs to configure destinations for your function
  - All events for that function use the configured destinations
  - Can be set on the Function or a specific Alias or Version
- New event invoke config APIs
  - PutFunctionEventInvokeConfig
  - GetFunctionEventInvokeConfig
  - UpdateFunctionEventInvokeConfig
  - ListFunctionEventInvokeConfig
  - DeleteFunctionEventInvokeConfig



# Demo

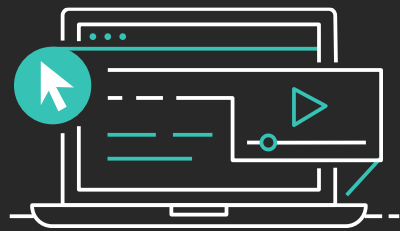
# Best practices

- Set a TTL on your event invokes
- Configure alarms on DestinationDeliveryFailures
- Use configurations on aliases

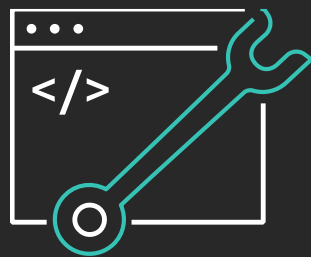
```
{
  "version": "1.0",
  "timestamp": "2019-11-24T21:52:47.333Z",
  "requestContext": {
    "requestId": "8ea123e4-1db7-4aca-ad10-d9ca1234c1fd",
    "functionArn": "arn:aws:lambda:sa-east-1:123456678912:function:event-destinations:$LATEST",
    "condition": "RetriesExhausted",
    "approximateInvokeCount": 3
  },
  "requestPayload": {
    "Success": false
  },
  "responseContext": {
    "statusCode": 200,
    "executedVersion": "$LATEST",
    "functionError": "Handled"
  },
  "responsePayload": {
    "errorMessage": "Failure from event, Success = false, I am failing!",
    "errorType": "Error",
    "stackTrace": [
      "exports.handler (/var/task/index.js:18:18)"
    ]
  }
}
```

# 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 Deep Dive: Lambda@Edge and Deep Dive on AWS Fargate



Additional digital and classroom trainings cover modern application development and computing

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

# Thank you!

**DJ Carroll**

djc@amazon.com

**Rory Jacob**

roryj@amazon.com



Please complete the session survey in the mobile app.