

Eventbridge, best new serverless solution since lambda?

Overview of new features

Jacob Verhoeks

Awsug.nl 24 May 2022

Jacob Verhoeks

Schuberg Philis

AWS Architect / Data Engineer

<https://www.linkedin.com/in/jacobverhoeks/>

<https://github.com/jverhoeks>

<https://jacob.verhoeks.org/>

AWS
community
builders

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PHILIS

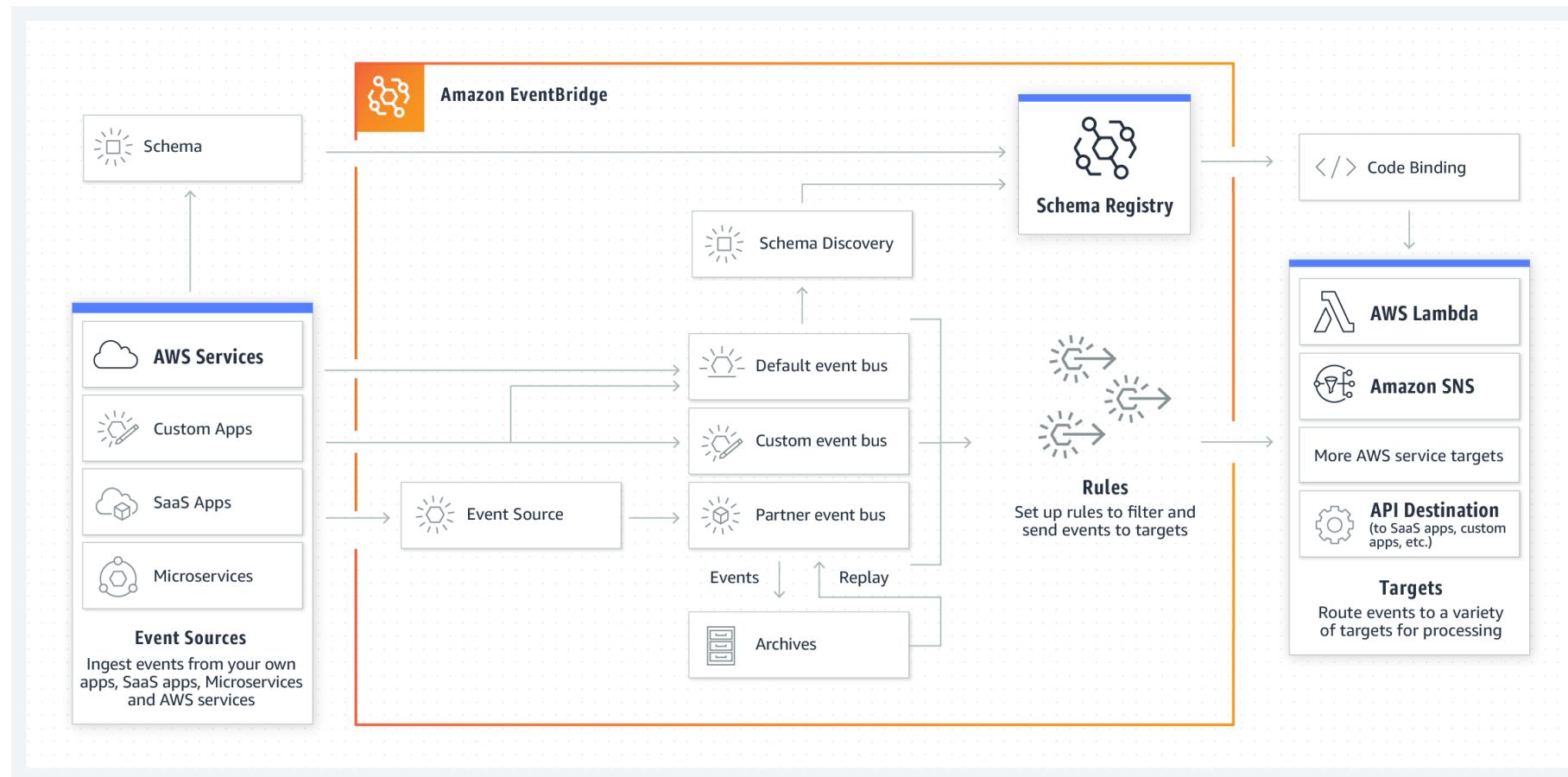


EventBridge Overview releases Handy tools

For today



July 2019 Announcement



<https://aws.amazon.com/blogs/aws/amazon-eventbridge-event-driven-aws-integration-for-your-saas-applications/>

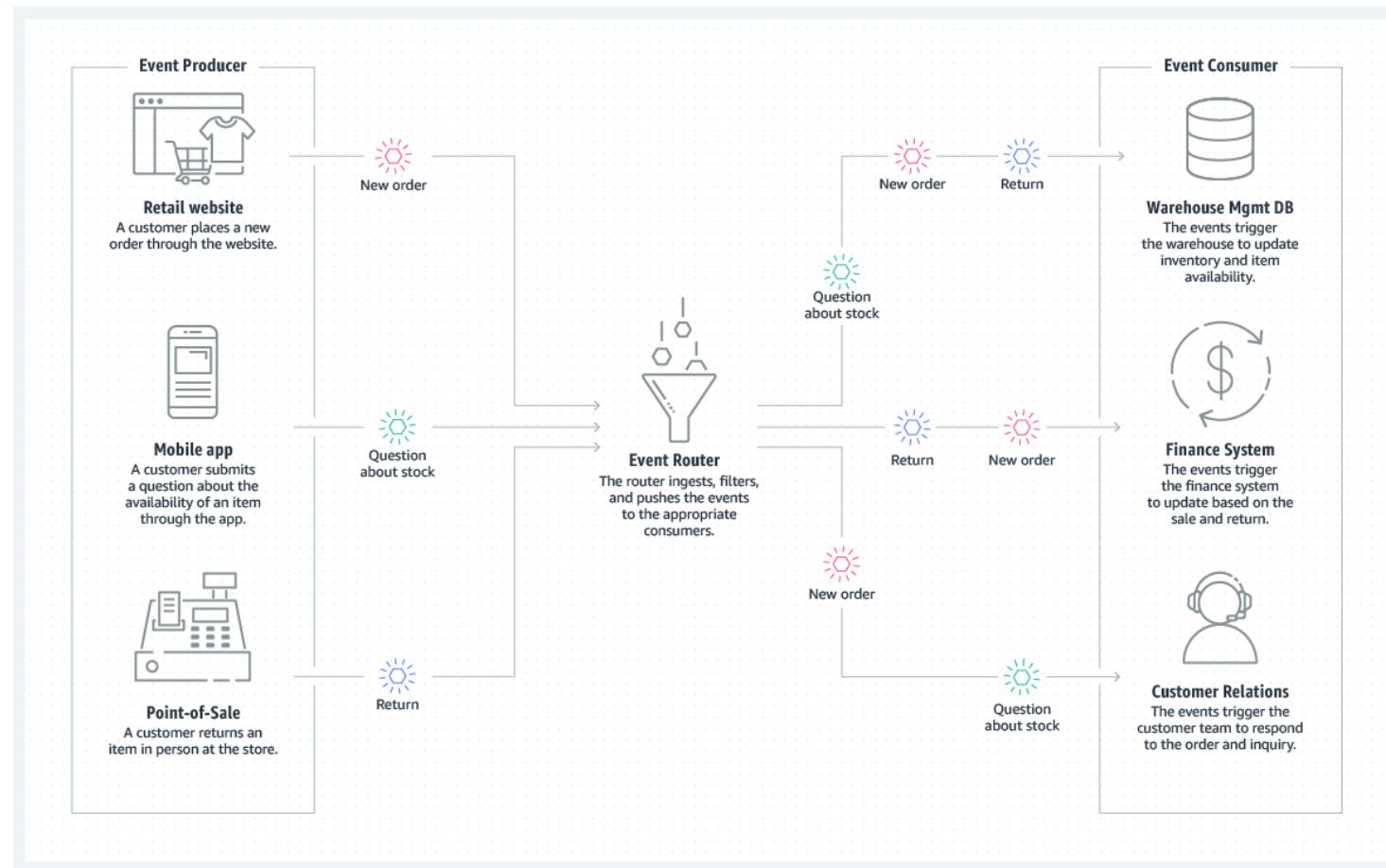
Event Driven Design

Async messaging

AWS Cloudtrail
(except: list, get, describe)

AWS Services

SaaS



<https://docs.aws.amazon.com/eventbridge/latest/userguide/eb-service-event.html>

Oct 2019: Cloudformation & CDK

Type: AWS::Events::EventBus

Properties:

EventSourceName: *String*

Name: *String*

Tags:

- *TagEntry*

```
const bus = new events.EventBus(this, 'bus', {  
  eventBusName: 'MyCustomEventBus'  
});
```

Terraform start Sep 2019, finally released March **2022**

```
resource "aws_cloudwatch_event_bus" "messenger" {  
  name = "chat-messages"  
}
```

Re:invent 2019/May 2020 Schema Registry

Amazon EventBridge > Schemas > aws.signin@AWSConsoleSignInViaCloudTrail

aws.signin@AWSConsoleSignInViaCloudTrail

Schema details			
Schema name	Last modified	Schema ARN	-
aws.signin@AWSConsoleSignInViaCloudTrail	Feb 8, 2021, 06:04 PM GMT+1	Schema registry	Number of versions
		aws.events	1
Description	Schema for event type AWSConsoleSignInViaCloudTrail, published by AWS service aws.signin	Schema type	OpenAPI 3.0

Version 1 Created on Feb 8, 2021, 06:04 PM GMT+1

Version 1 ▾ Action ▾ Download code bindings

```
1 {
2   "openapi": "3.0.0",
3   "info": {
4     "version": "1.0.0",
5     "title": "AWSConsoleSignInViaCloudTrail"
6   },
7   "paths": {},
8   "components": {
9     "schemas": {
10       "AWSEvent": {
11         "type": "object",
12         "required": ["detail-type", "resources", "id", "source", "time", "detail", "region", "version", "account"],
13         "x-amazon-events-detail-type": "AWS Console Sign In via CloudTrail",
14         "x-amazon-events-source": "aws.signin",
15         "properties": {
16           "detail": {
17             "$ref": "#/components/schemas/AWSConsoleSignInViaCloudTrail"
18           }
19         }
20       }
21     }
22   }
23 }
```

Lookup AWS Events
Register Application Events
Auto Discovery

OpenAPI 3 /
JSONSchema Draft4

Codebindings to create Events
(Java/Typescript/Python/GO)

Feb 2020 Content Filtering

```
{  
  "detail": {  
    "state": [ { "anything-but": "initializing" } ]  
  }  
}
```

Filter messages in a rule to have only a subnet pass through.

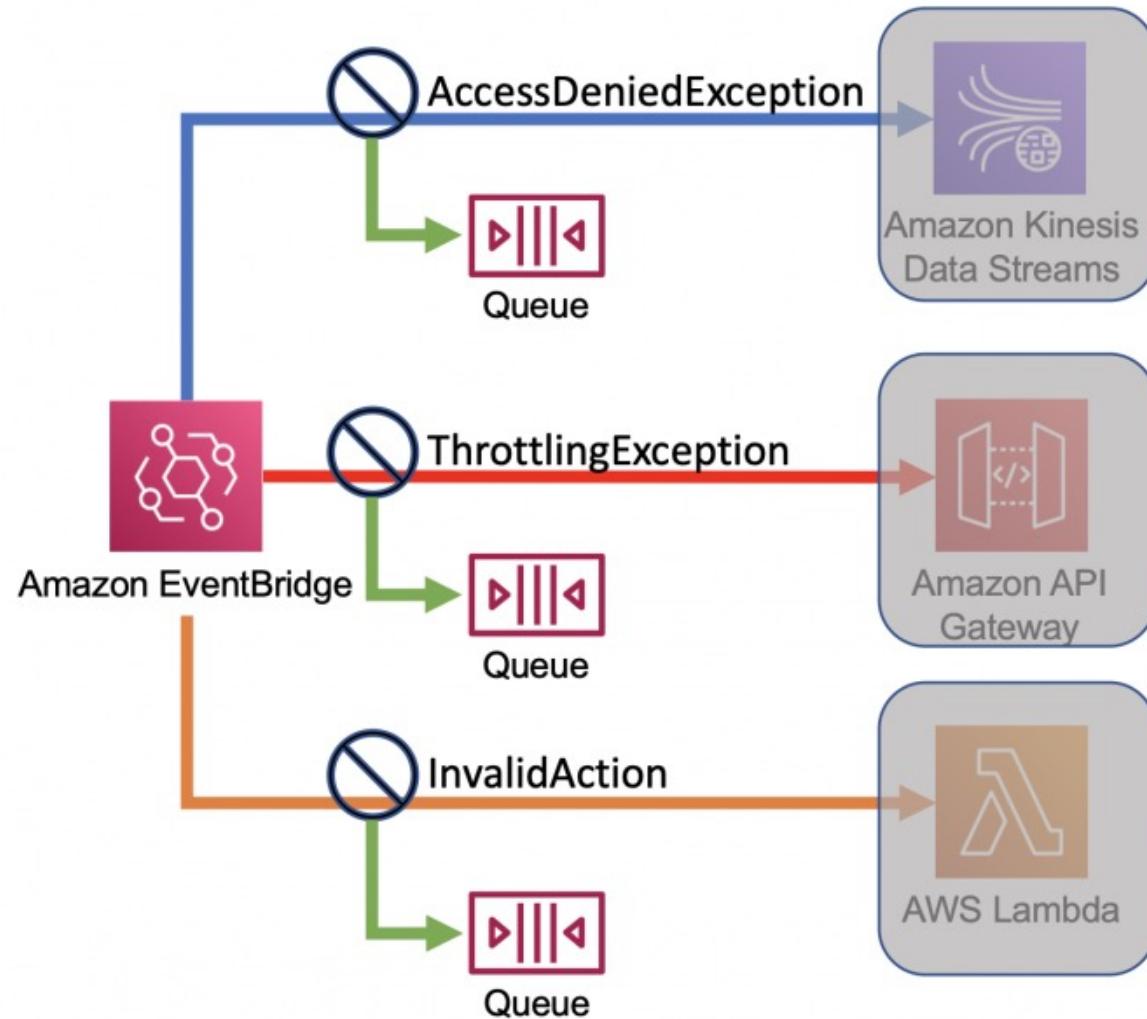
```
{  
  "detail": {  
    "sourceIPAddress": [ { "cidr": "10.0.0.0/24" } ]  
  }  
}
```

Instead of having to do this in a lambda

Oct 2020 Dead letter Queues

DLQ = SQS Queue

Default Retry Policy
24 hours
185 times



Re:invent 2020 Event Archive & Replay

Define archive details

Create an archive by defining the source and the retention period. Events are continuously saved in archives, and individual events will be deleted after the retention period. An archive will persist until you manually delete it.

Amazon EventBridge charges apply to archives. Please refer to [Amazon EventBridge Pricing](#) for details.

Archive detail		
Name <input type="text" value="Enter archive name"/> Maximum of 48 characters consisting of numbers, lower/upper case letters, .,-_. You can't change the name of the archive after it is created.	Description <input type="text" value="This is a description"/> Maximum of 512 characters.	Source The source, e.g. an event bus, from which the events will be archived. <input type="text" value="default"/> You can't change the source of the archive after it is created.
Retention period The number of days the archive of events will be retained. 0 is equivalent to Indefinite. The maximum is 2 billion days. <input checked="" type="radio"/> Indefinite <input type="radio"/> <input type="text" value="90"/> days		

Specify rules(s) - optional
You can select one or more rules on the destination event bus. Events will be replayed to all rules or specific rules.

All rules
 Specify rules

Replay time frame

Specify a time frame for replaying the events.

Start time
The ingestion time of the first event to be replayed.

Date <input type="text" value="YYYY/MM/DD"/> YYYY/MM/DD	Time <input type="text" value="hh:mm:ss"/> Use 24-hour format timestamp (hh:mm:ss)	Time zone <input type="text" value="Local time zone"/>
---	--	---

End time
The ingestion time of the last event to be replayed.

Date <input type="text" value="YYYY/MM/DD"/> YYYY/MM/DD	Time <input type="text" value="hh:mm:ss"/> Use 24-hour format timestamp (hh:mm:ss)	Time zone <input type="text" value="Local time zone"/>
---	--	---

<https://aws.amazon.com/blogs/aws/new-archive-and-replay-events-with-amazon-eventbridge/>

Mar 2021 X-Ray + HTTP Api Destinations



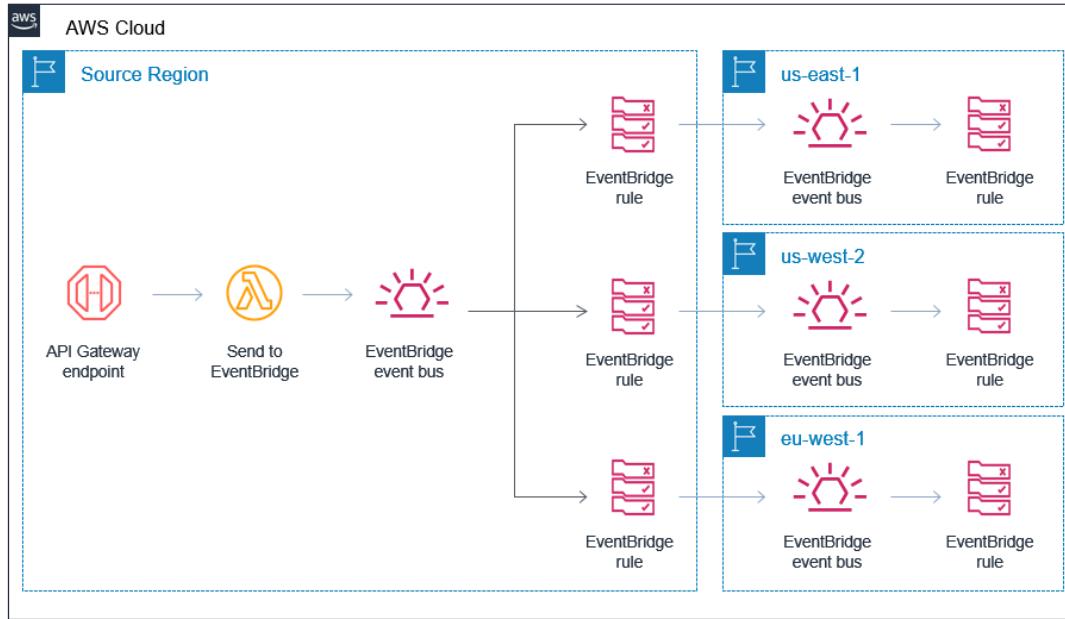
API Destination

Authentication: Basic, Oauth, API key

JSON, with transformation

Datadog, NewRelic, Slack, etc, or your own

April 2021 Cross Region Eventbus & Chatbot



ECS Task State Change | us-east-2 | Account: [REDACTED]

An ECS task running on cluster 'Default' transitioned to PENDING status.

Task arn:aws:ecs:us-east-

2:[REDACTED]task/Default/ddcf6c62c28a4fa9af41c3d1769ec162

Task Definition arn:aws:ecs:us-east-2:[REDACTED]task-definition:first-run-task-definition:1

Cluster arn:aws:ecs:us-east-2:[REDACTED]:cluster/Default

Last Status PENDING

Desired Status RUNNING

Updated at Wed, 14 Apr 2021 00:14:12 GMT

<https://aws.amazon.com/blogs/mt/monitor-amazon-eventbridge-events-in-your-slack-channels-with-aws-chatbot/>

July 2021 Glue workflows

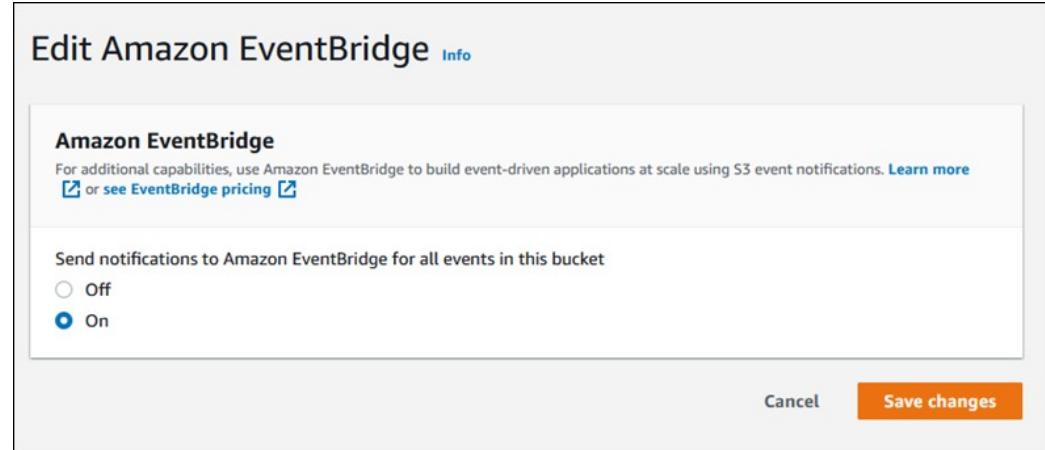
Event Sources

Crawler State Change
Data Catalog Database State Change
Data Catalog Table State Change
Job Run Status
Job State Change

Event Targets

Initiate Glue Workflow with event rule

Re:invent 2021 S3 Event Notification (1/3)



Alternative for Event Notifications

Advanced Filtering
Multiple destinations
Fast, reliable (at-least once)

<https://aws.amazon.com/blogs/aws/new-use-amazon-s3-event-notifications-with-amazon-eventbridge/>

Re:invent 2021 S3 Event Notification (2/3)

Sample event - optional

You don't have to select or enter a sample event, but it's recommended so you can reference it when writing or filter criteria.

You can reference the sample event when write the event pattern, or use the sample event to test your event pattern. Find a sample event, enter your own, or edit a sample event below.

Learn more about sample/test event in [Test Event Pattern](#).

AWS events EventBridge partner events Enter event

Sample events
Filter by event source and type or by keyword.

Object Created ▾

```
1 {
2   "version": "0",
3   "id": "17793124-05d4-b198-2fde-7edede63b103",
4   "detail-type": "Object Created",
5   "source": "aws.s3",
6   "account": "123456789012",
7   "time": "2021-11-12T00:00:00Z",
8   "region": "ca-central-1",
9   "resources": ["arn:aws:s3:::example-bucket"],
10  "detail": {
11    "version": "0",
12    "bucket": {
13      "name": "example-bucket"
14    },
15    "object": {
16      "key": "example-key",
17      "size": 5,
18      "etag": "b1946ac92492d2347c6235b4d2611184",
19      "version_id": "TVV2n45PTQccRhiHn1hovC51o_MnRo"
20    }
21 }
```

Event pattern [Info](#) [Event pattern form](#) [Custom pattern](#)

Sample event matched the event pattern.

Event pattern
Write an event pattern in JSON. You can test the event pattern against the sample event. You can also go to pre-defined patterns or use the event pattern form.

Select matching pattern ▾ Insert Content-based filter syntax

```
1 {
2   "source": ["aws.s3"],
3   "detail-type": ["Object Created"],
4   "detail": {
5     "bucket": {
6       "name": [
7         "example-bucket"
8       ]
9     },
10    "object": {
11      "size": [
12        "numeric": ["<=", 1048576]
13      ]
14    }
15  }
16 }
```

JSON is valid

[Copy](#) [Prettify JSON](#) [Event pattern form](#) [Test pattern](#)

Re:invent 2021 S3 Event Notification (3/3)

Target 1

Target types

Select an EventBridge event bus, EventBr

- EventBridge event bus
- EventBridge API destination
- AWS service

API Gateway

Batch job queue

CloudWatch log group

CodeBuild project

CodePipeline

EBS Create Snapshot

EC2 ImageBuilder

EC2 RebootInstances API call

EC2 StopInstances API call

EC2 TerminateInstances API call

ECS task

Firehose delivery stream

Glue workflow

Incident Manager response plan

Inspector assessment template

Kinesis stream

Lambda function

Redshift cluster

SageMaker Pipeline

SNS topic

SQS queue

Step Functions state machine

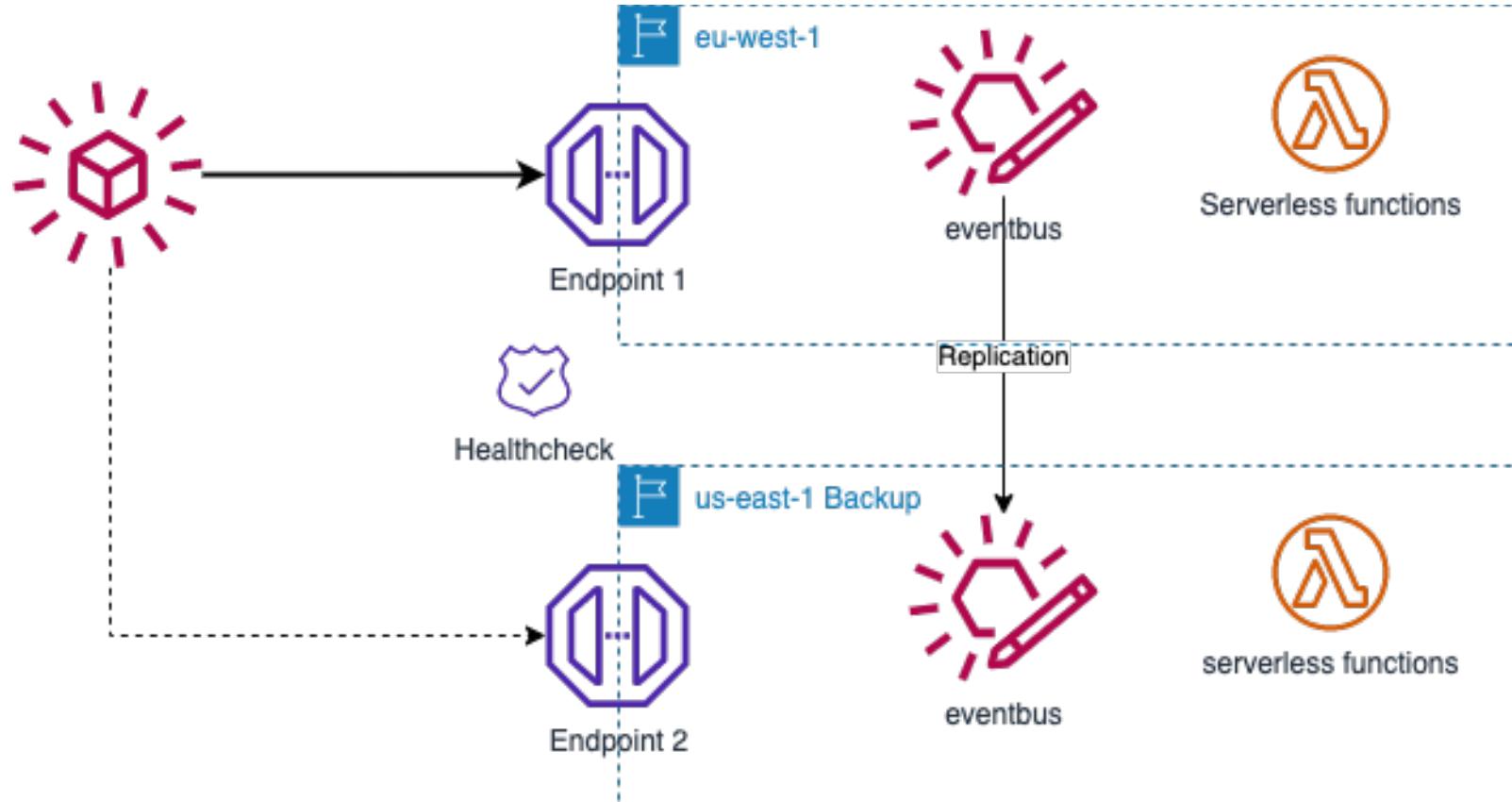
System Manager Automation

System Manager OpsItem

System Manager Run Command

SNS topic

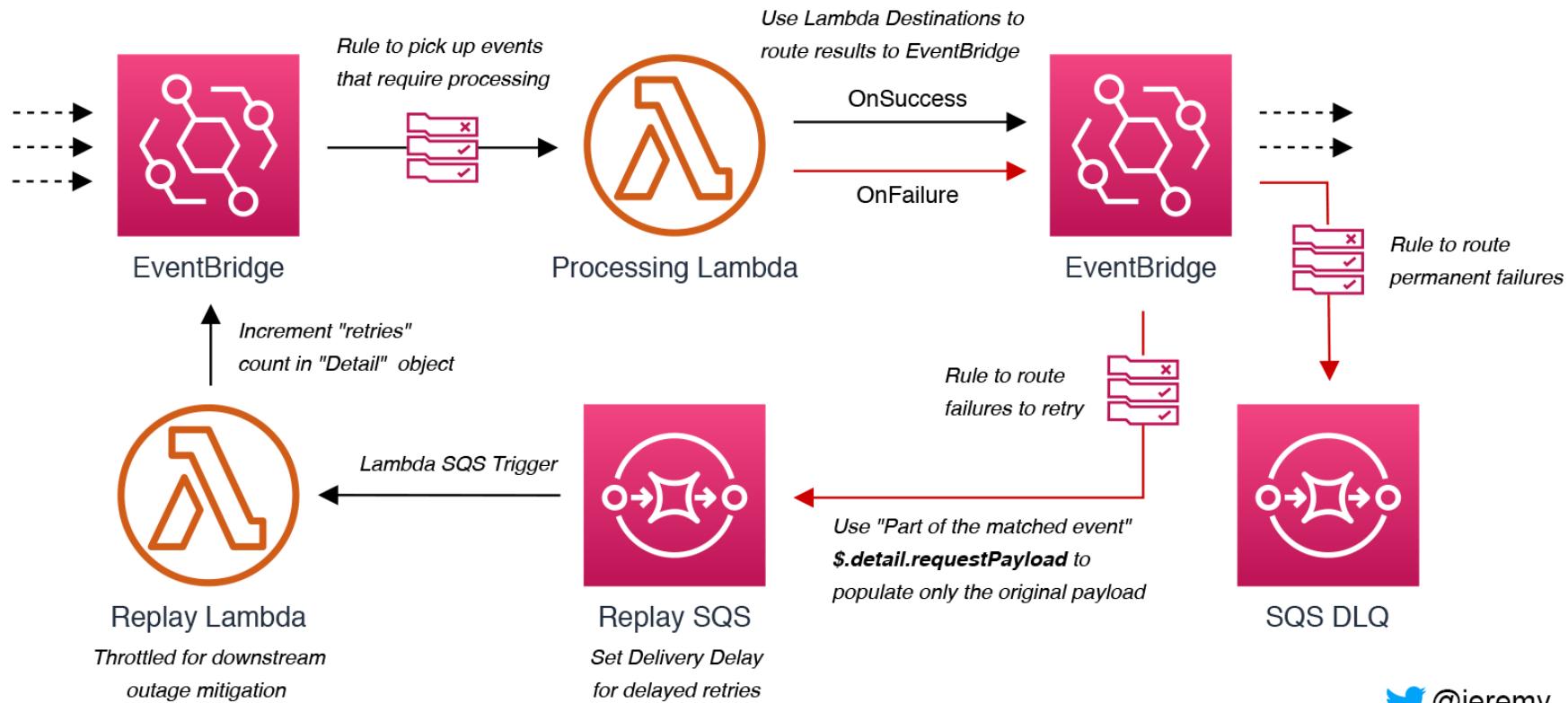
April 2022 Global Endpoints



A collage of various calendar cards showing dates, days of the week, and months. The cards are arranged in a overlapping, non-linear fashion. Some visible text includes: 'MARCH TUESDAY' (blue), 'JANUARY THURSDAY' (black), 'APRIL MARDI' (black), 'MARCH DAY' (black), 'AUGUST SUNDAY' (black), 'SEPTEMBER FRIDAY' (black), 'NOVEMBER MONDAY' (black), 'JUNE MONDAY' (black), 'DECEMBER TUESDAY' (black), 'AUGUST DNESD' (black), 'MARCH 101' (red), 'MARCH 23' (orange), 'MARCH 29' (blue), 'MARCH 30' (green), 'MARCH 31' (blue), 'MARCH 24' (blue), 'MARCH 22' (green), 'MARCH 19' (purple), 'MARCH 16' (maroon), and 'MARCH 12' (green).

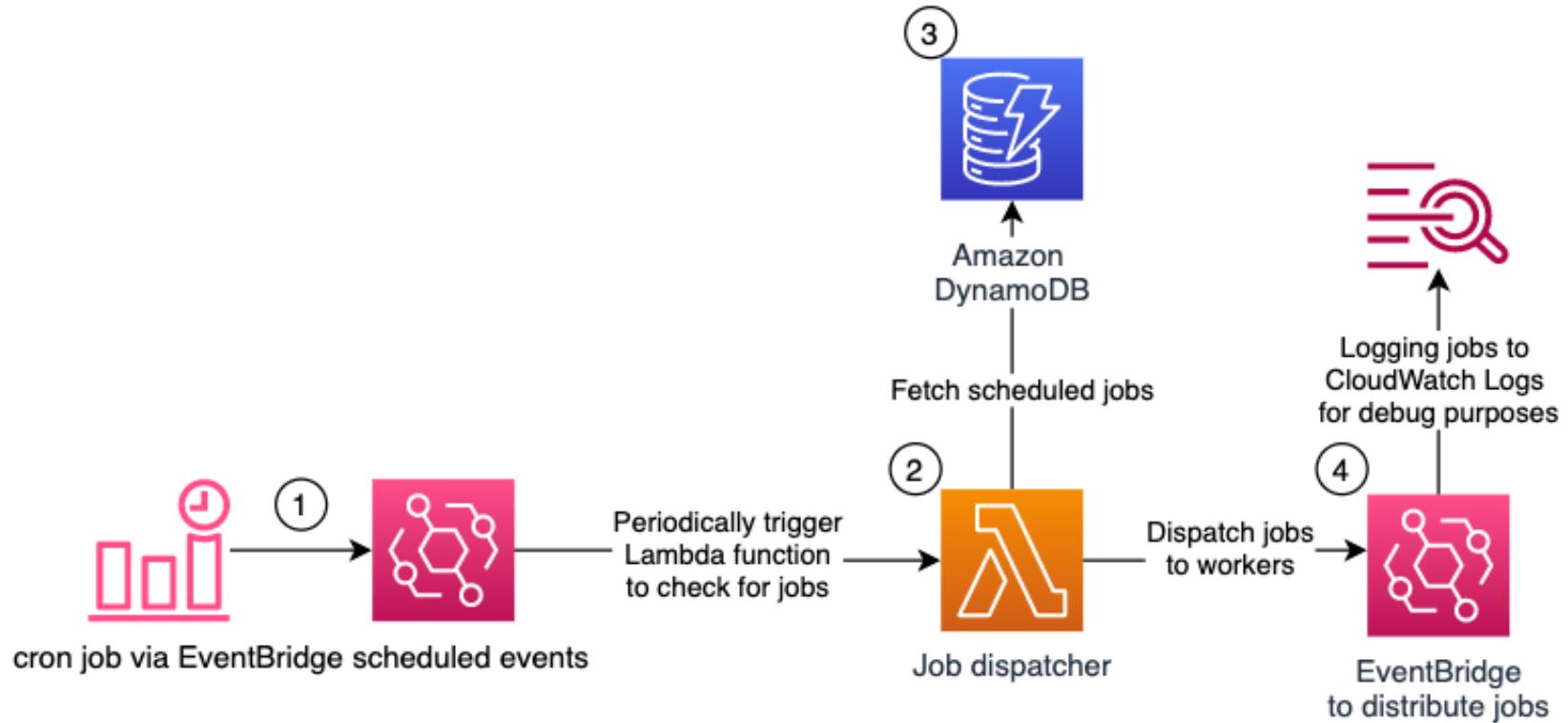
Eventbridge Patterns

Event Processing Conditional Retry Pattern



 @jeremy_daly

Eventbridge Patterns: cron



<https://aws.amazon.com/blogs/architecture/serverless-scheduling-with-amazon-eventbridge-aws-lambda-and-amazon-dynamodb/>

Interesting links

<https://serverlessland.com/whats-new?services=amazon-eventBridge>

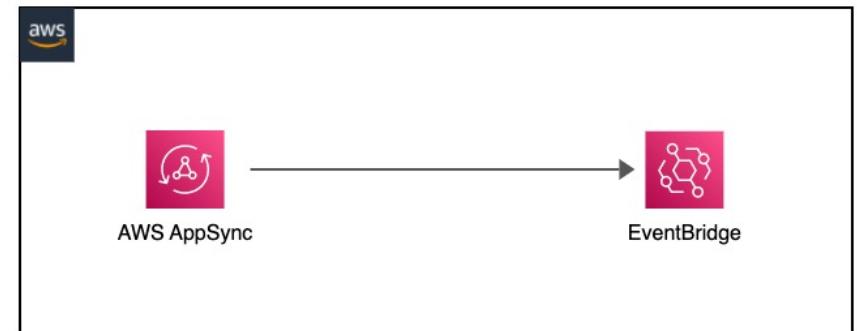
<https://serverlessland.com/patterns?services=eventbridge>

David Boyney (Joined AWS as developer advocate serverless)

<https://github.com/boyney123/awesome-eventbridge>

<https://www.boyney.io/projects>

<https://www.eventbridgebook.com/>



Create an AppSync API with an EventBridge event bus

This project contains a sample pattern for using an Amazon EventBridge event bus as a HTTP data source with an AWS AppSync API.

```
import { Stack, StackProps, CfnOutput } from 'aws-cdk-lib';
import { Construct } from 'constructs';
import { GraphqlApi, Schema, FieldLogLevel, AuthorizationType } from 'aws-cdk-lib/aws-appsync';
import { EventBus } from "aws-cdk-lib/aws-events";
import { join } from 'path';
```

EventBridge Transformer

Amazon EventBridge Transformer

Quickly generate input transforms for Amazon EventBridge.

Enter your event, select properties to map, profit.

Show Example Output

Event Payload →
Click on the properties you want to map.

```
{  
    "version": "0",  
    "id": "0d079340-135a-c8c6-95c2-41fb8f",  
    "detail-type": "OrderCreated",  
    "source": "myapp.orders",  
    "account": "123451235123",  
    "time": "2022-02-01T18:41:53Z",  
    "region": "us-west-1",  
    "detail": {  
        "metadata": {  
            "correlation_id": "dd9340-1",  
            "service": "my-service",  
            "domain": "SHOP"  
        },  
        "data": {  
            "amount": "19.99",  
            "quantity": "2",  
            "orderId": "0d079340-535a-c8c",  
            "userId": "9e223efa-e318-4e06"  
        }  
    }  
}
```

PROBLEMS 0  VALID

Input Path →
Define variables as key value pairs.

```
{  
    "account": "$.account",  
    "service": "$.detail.metadata.service",  
    "amount": "$.detail.data.amount"  
}
```

PROBLEMS 0  VALID

Input Template →
Define variables as key value pairs.

```
{  
    "account": "<account>",  
    "service": "<service>",  
    "amount": "<amount>"  
}
```

PROBLEMS 0  VALID

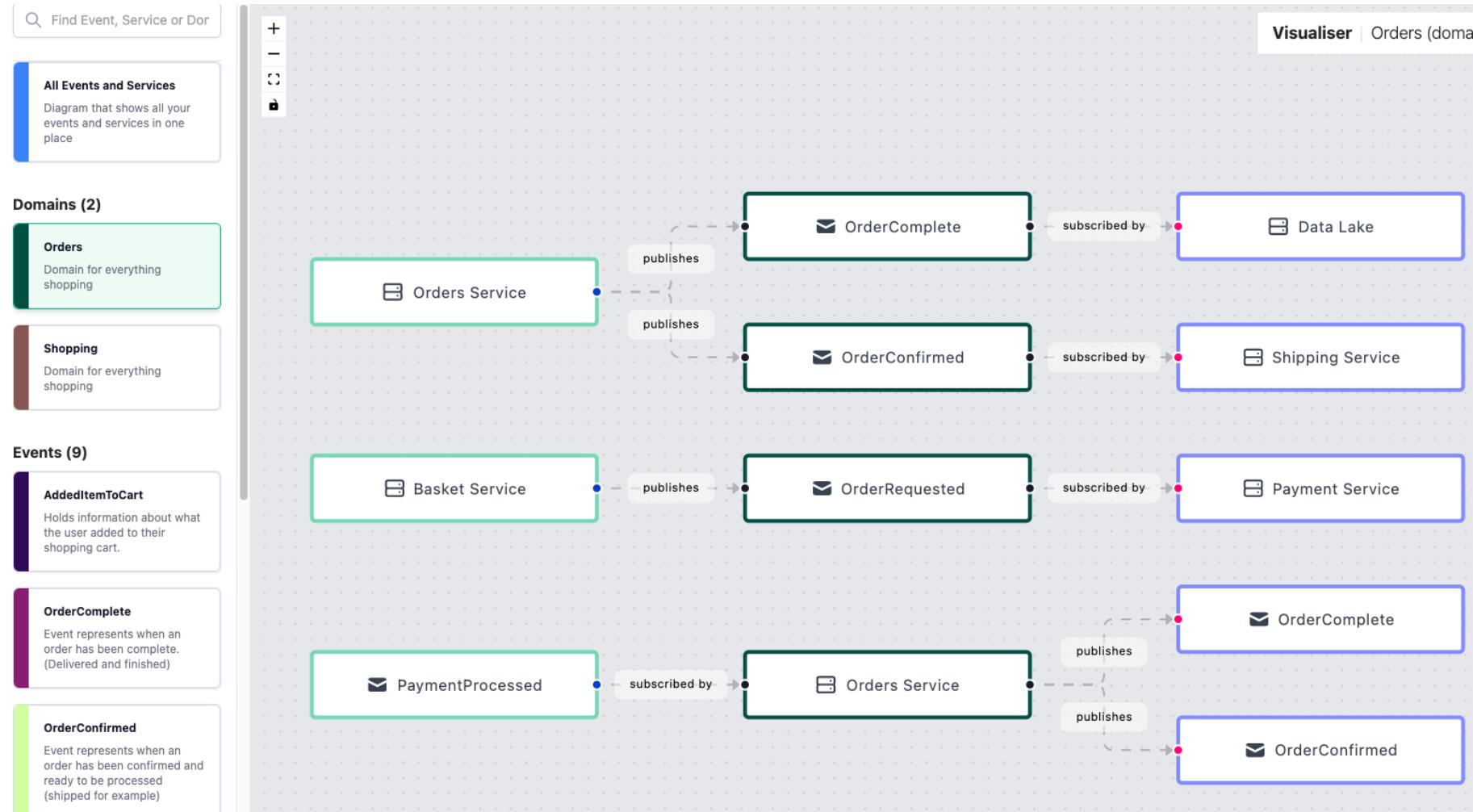
Example Output
Example output based on transform rules.

```
{  
    "account": "123451235123",  
    "service": "my-service",  
    "amount": "19.99"  
}
```

PROBLEMS 0  VALID

<https://eventbridge-transformer.vercel.app/>

EventCatalog (1/2)



<https://www.eventcatalog.dev/>

EventCatalog (2/2)

Payment Service

Event based application that integrates with Stripe.

The payment service is our own internal payment service that listens to events from stripe and handles them within our own domain.

We use Stripe to handle services and use this Payment service to enrich events for internal use.

Payment service API

0.0.1 OAS3

A Payment Service API

Servers

http://payment.example.com/v1 - Optional server description, e.g. Main (production) server

PaymentServices

GET /getSinglePaymentURL Generate a Payment endpoint URL

+ - ☰ 🔒

OrderRequested → Payment Service → PaymentProcessed

● PaymentProcessed

Subscribes to Events (1)
OrderRequested

Domain Owners (1)
David Boyne

View in Visualiser

Powerful tool in serverless architecture

Async vs stepfunction sync

AWS change events via Cloudtrail

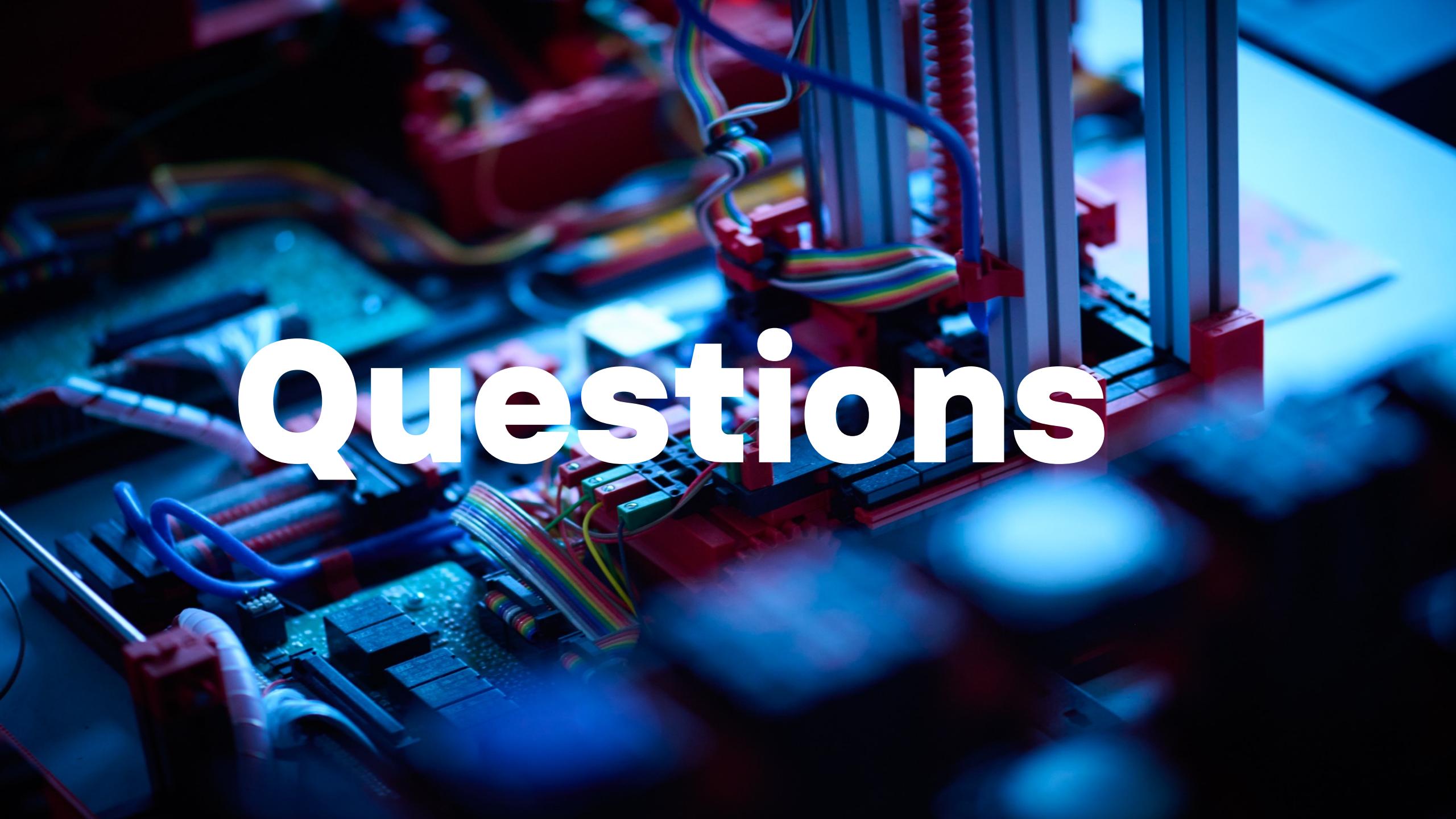
SaaS / External events input

Output via HTTP api's

Move logic out of lambda's

Conclusions





Questions



Next Topics?

- New services
- Deep dives
- Explain Architecture and lessons learned
- Development or Infrastructure