AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

API202

Using an event-driven application pattern to improve customer experience

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Agenda

Introduction to event-driven architecture

Introduction to Amazon EventBridge

Introduction to Amazon Location Service

Architecture deep dive: Curbside pickup

Implementation best practices and lessons learned

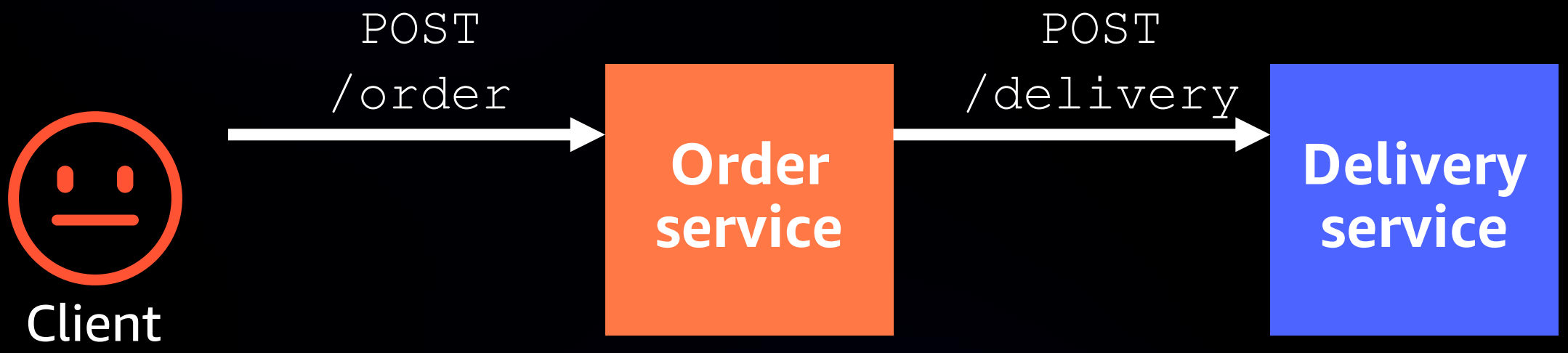
Q&A

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Event-driven architecture with Amazon EventBridge

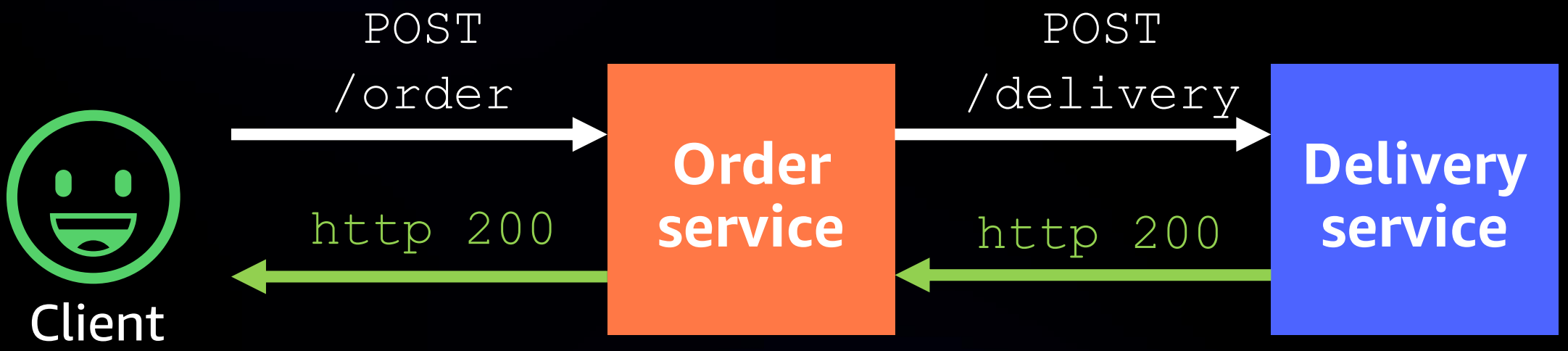
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The synchronous API



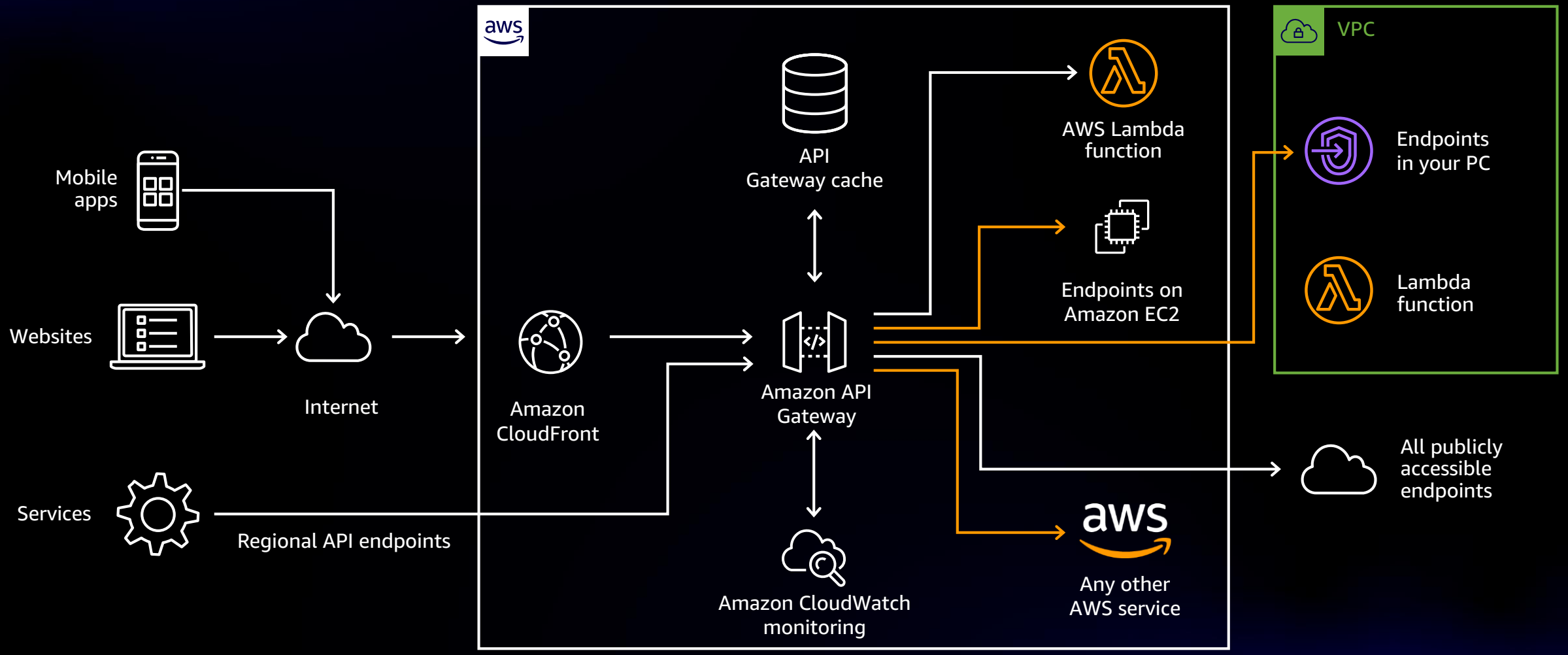
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The synchronous API

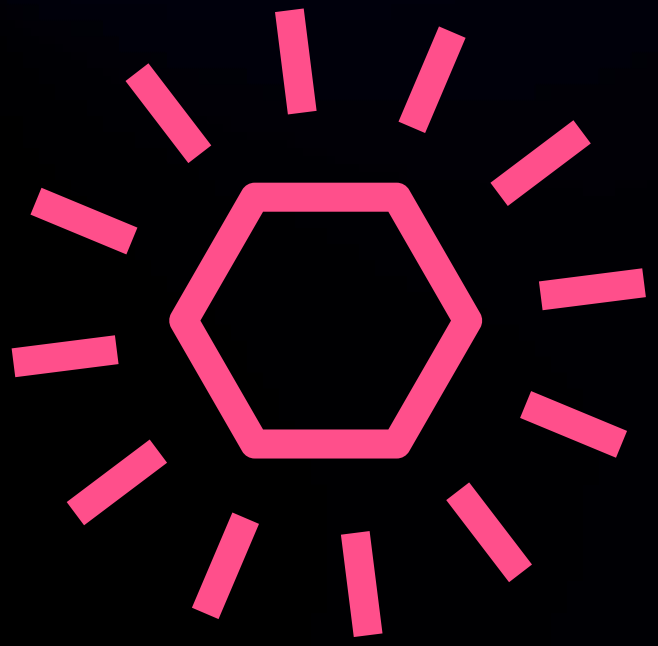


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A typical architecture on AWS



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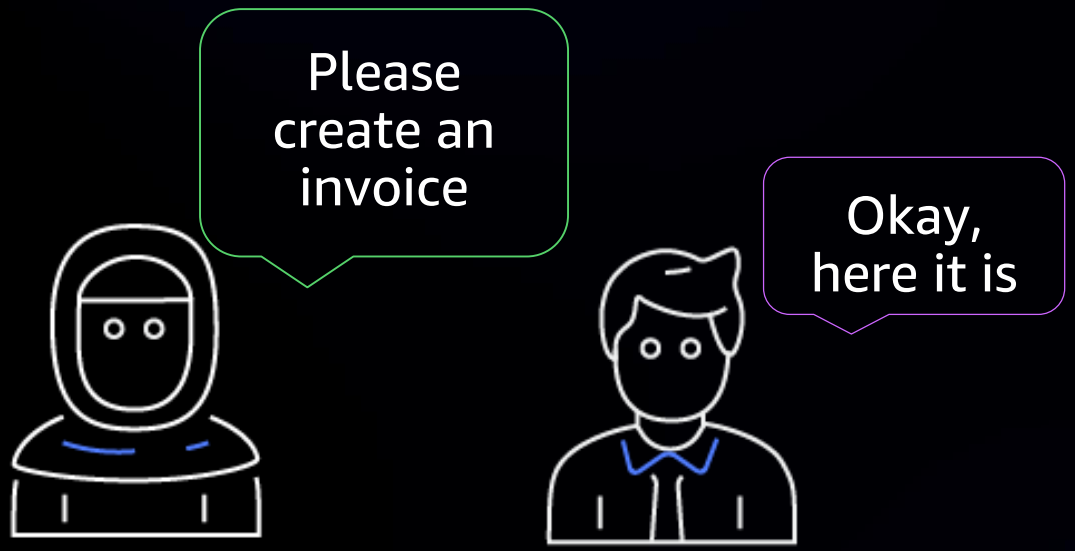
event

[i-’vent] noun

A signal that a system’s state has changed

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Events are observable, not directed



Directed commands



Observable events

aws

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Building an event-driven application

AWS Lambda function



Node.js
Python
Java
C#/.NET Core
Go
Ruby
Runtime API

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Building an event-driven application

Event source



Lambda function



Changes in data state



Requests to endpoints



Changes in Resource state



Node.js
Python
Java
C#/.NET Core
Go
Ruby
Runtime API

aws

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Building an event-driven application

Event source

Lambda function

Services







Changes in data state



Requests to endpoints



Changes in Resource state

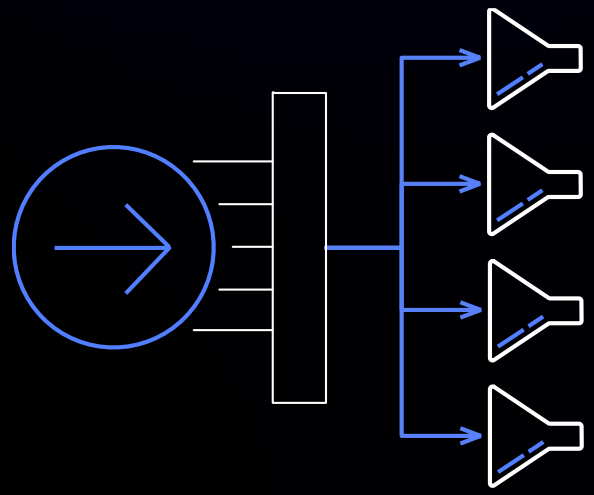


Node.js
Python
Java
C#/.NET Core
Go
Ruby
Runtime API

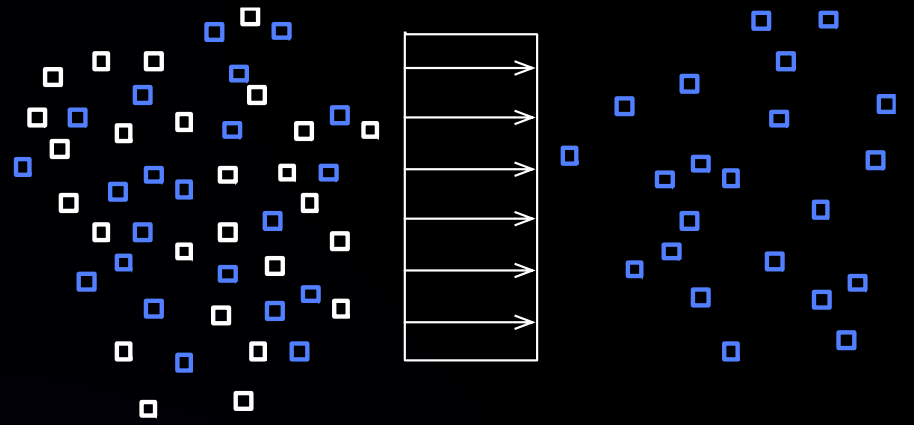


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What makes an event-driven architecture better: Event routers



Abstracts producers and consumers



Selects and filters events

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Benefits of event-driven architecture

- Ability to horizontally scale
- Reduced operational cost and complexity
- Better fault isolation for more resilient applications
- Programming language and technology agnostic
- Greater agility and flexibility

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Amazon EventBridge

A serverless event bus service for AWS services, your own applications, and SaaS providers

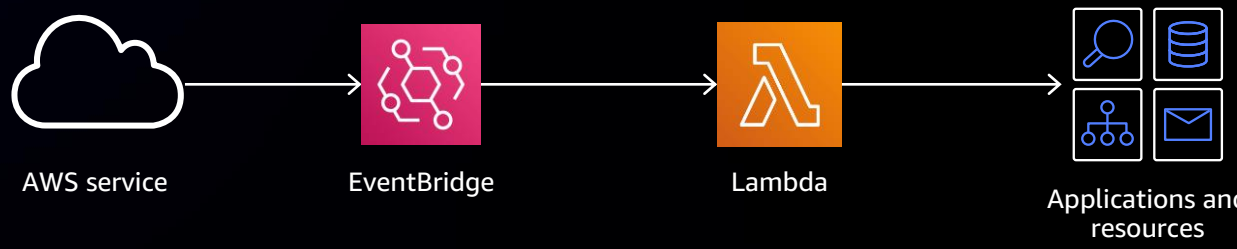
- Serverless – pay only for the events you process
- Simplified scaling avoids increasing costs to sustain and manage resources
- No upfront investments, ongoing licensing, or maintenance costs
- No specialist knowledge needed

aws

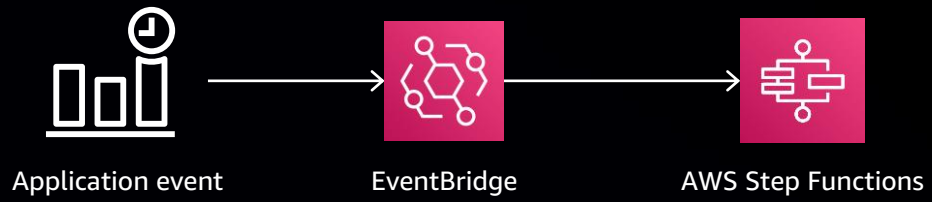
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Common EventBridge use cases

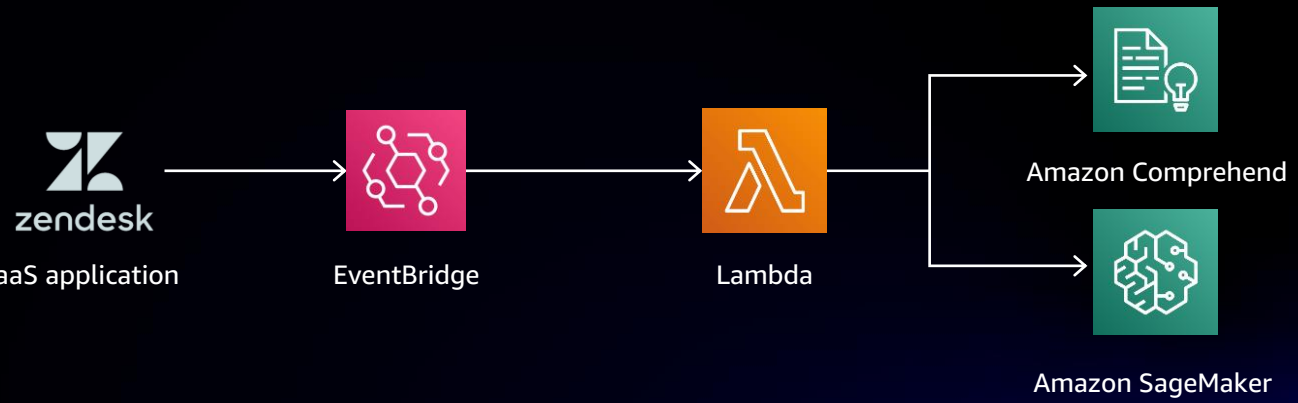
Take action



Run workflows

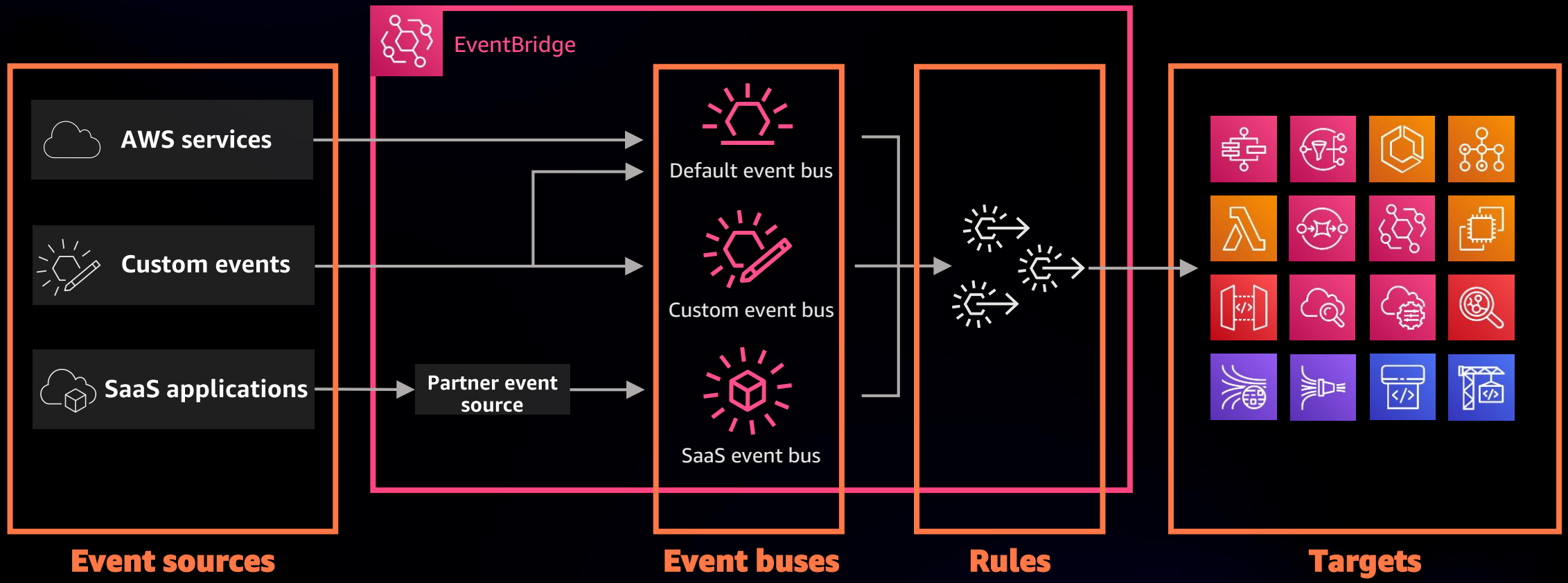


Apply intelligence



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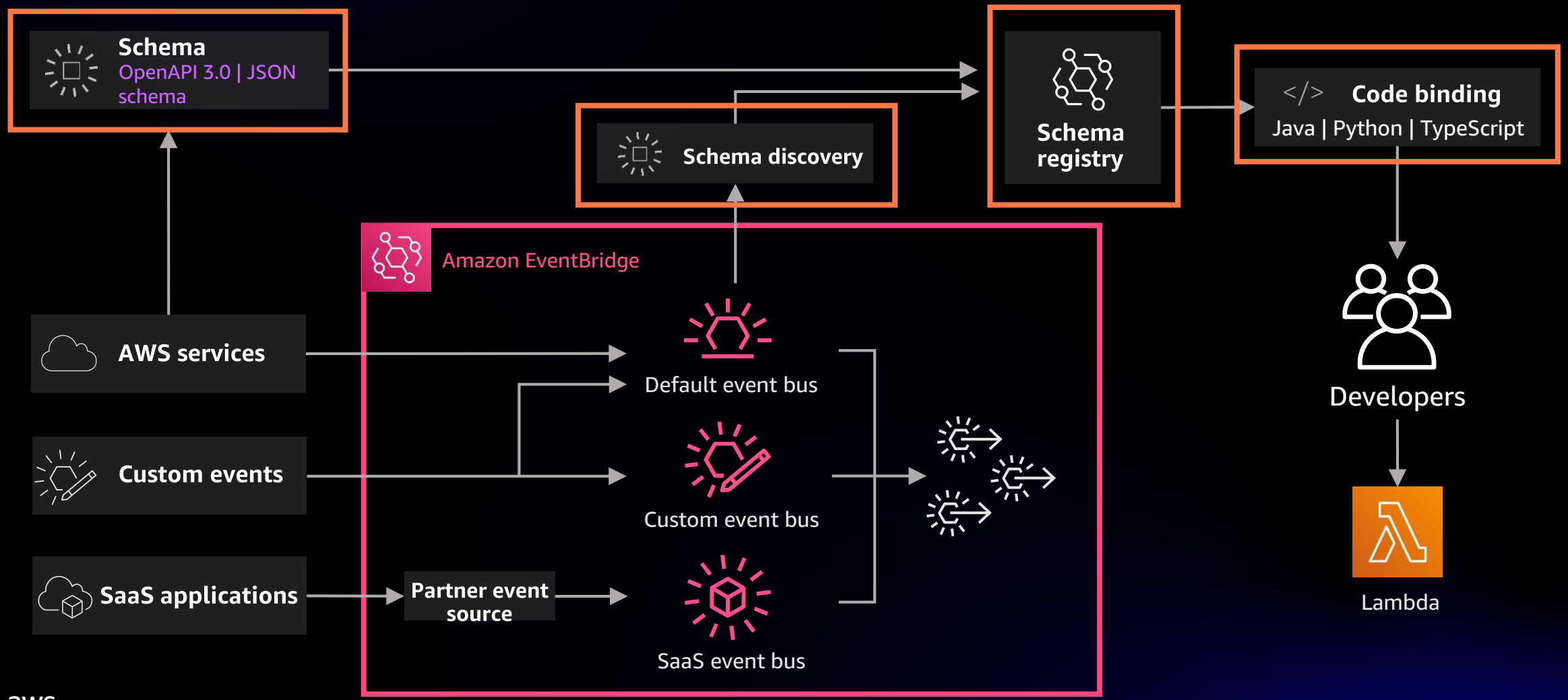
EventBridge architecture



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EventBridge architecture

EVENTBRIDGE SCHEMA REGISTRY



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Introduction to Amazon Location Service

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How customers use location-based services



Track assets and resources



Routing, delivery, and curbside



Visualization



Customer engagement

Location is an essential component of modern applications

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Location-based service challenges



Getting to production faster



Onboarding new providers



Getting quality data



Managing security and privacy



Controlling cost

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Amazon Location

- Easy access to high-quality data
- Cost-effective
- Private and secure
- Allows shorter time to production



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Amazon Location

Maps

MapLibre GL



Places

Geocoding
latitude and longitude



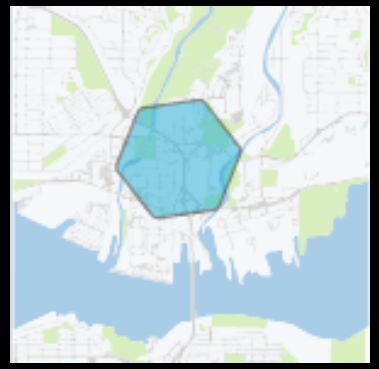
Routing



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Geofence collections



Trackers



- External queries are anonymized
- Choice of data provider
- Data ownership: storing places results permitted in AWS account

Data does not leave AWS account

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Building curbside pickup: Requirements

Ease of implementation

Best customer experience

Operational efficiency



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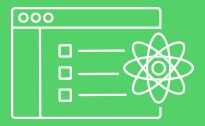
Why Amazon Location worked well for Amazon Fresh curbside pickup



Amazon Location's strong data privacy and protection terms mean that Amazon Fresh customer data is never exposed



Real-time routes with traffic improved estimates of arrival time, reduced wait time, and increased store efficiency



Fast and easy integration allowed Amazon Fresh to experiment and improve the customer experience quickly



Low cost allowed use of optimal route calculation frequency for best experience and remained within budget

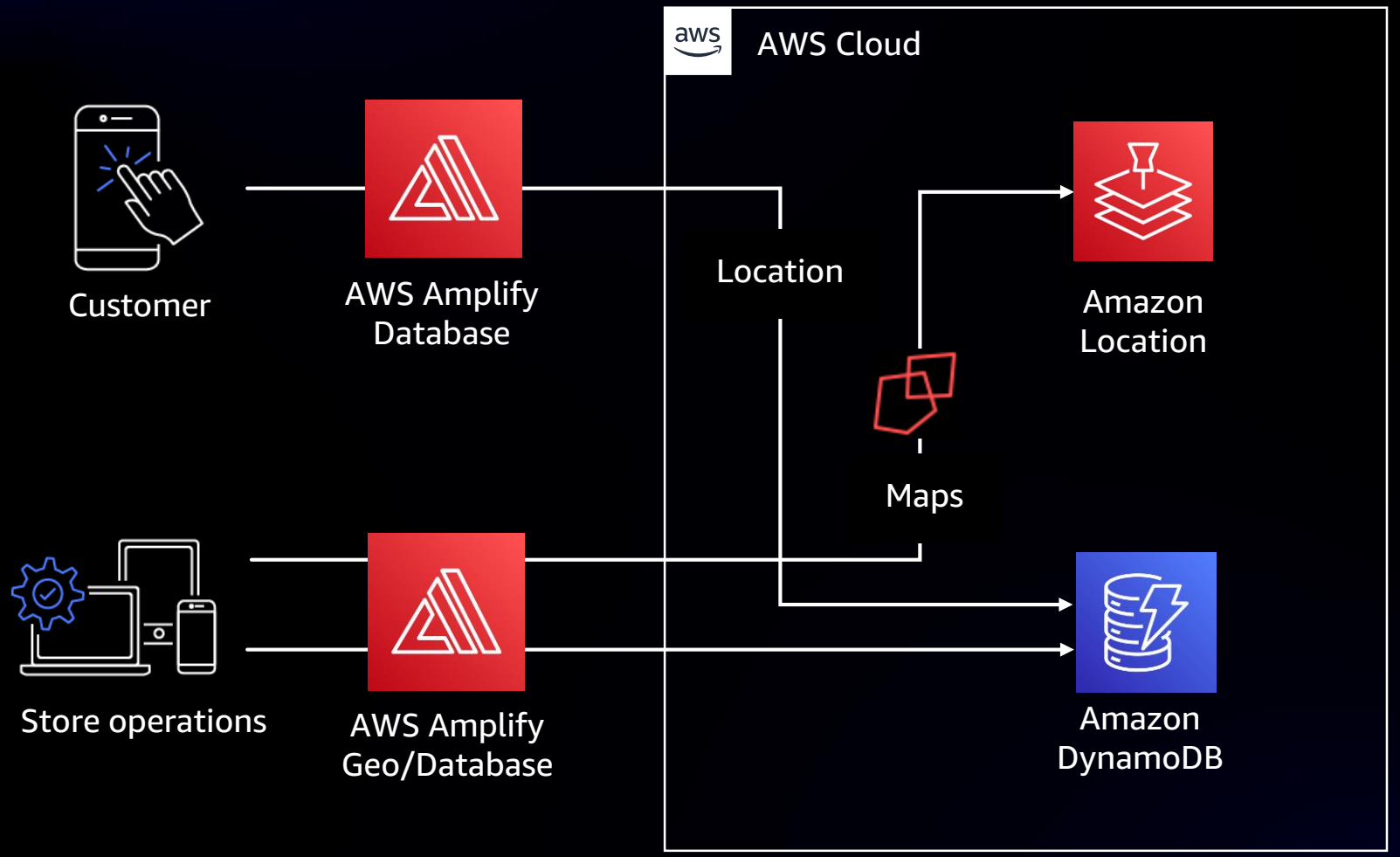
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Architecture deep dive: Curbside pickup

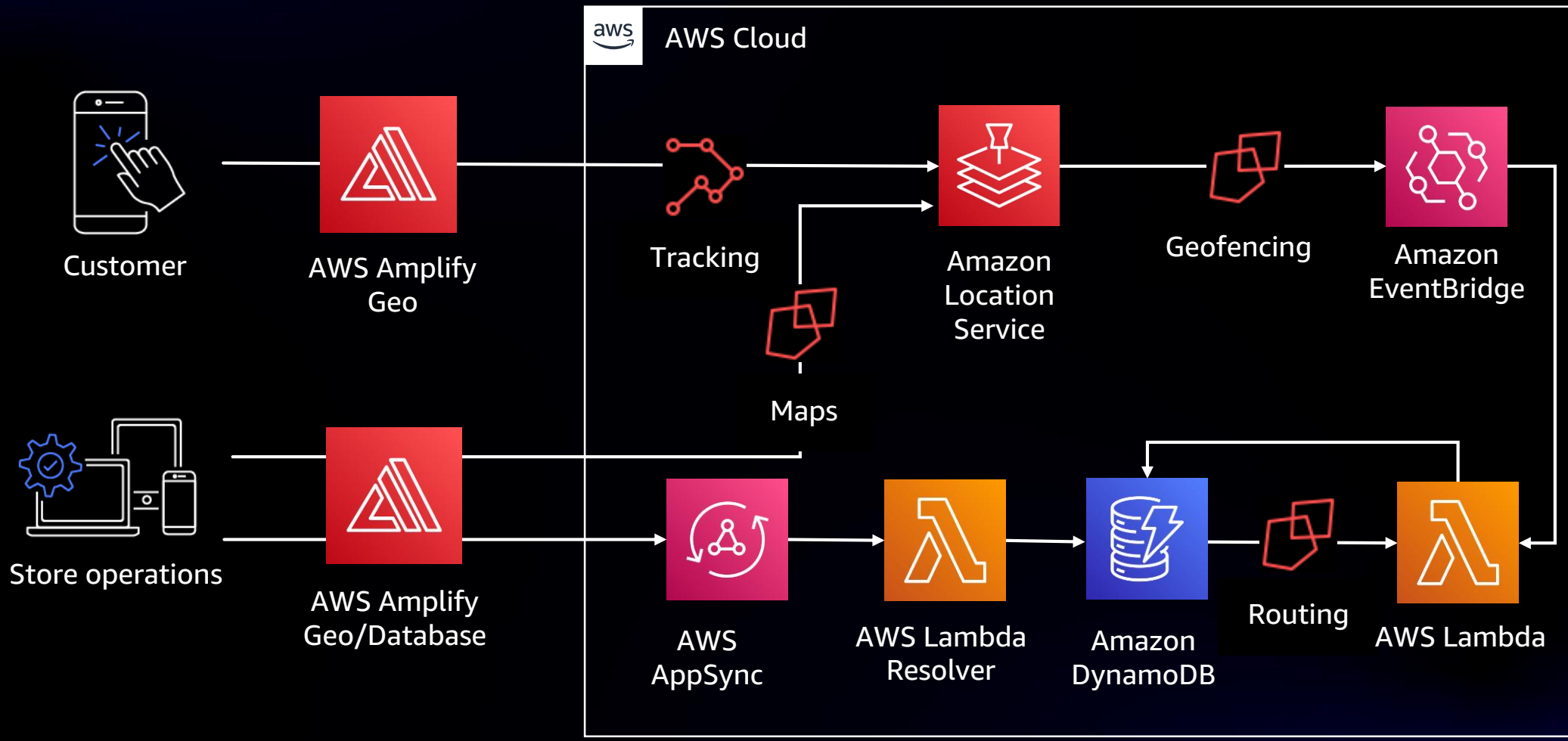
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Basic architecture: Curbside pickup



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Event-driven curbside pickup



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Session recap

Leverage AWS Amplify Geo to quickly add location capabilities to your app/service

Use Amazon Location to add routing, geofencing, tracking, and maps to improve customer experience

Easily integrate with other AWS and third-party services, and handle events using EventBridge

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Thank you!

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