

The background features a dark blue gradient on the left, transitioning into a large, abstract geometric shape on the right. This shape is composed of several overlapping planes in shades of purple, magenta, and blue, creating a sense of depth and movement. A bright orange-yellow curved line runs along the bottom edge of the abstract shape.

# aws SUMMIT

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CON302

# Serverlesspresso: Building an event-driven application from the ground up

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AWS



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# Agenda



## The workshop environment

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## The modules and services used

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## Coding

# General housekeeping

- Running time is 2 hours
- Use the AWS account provided
- Questions? We are here to help!

# Prerequisites

- Workshop **cannot** be completed with a tablet
- Have Chrome or Firefox (not compatible with Safari)
- Have familiarity with the AWS Management Console

# The AWS services you will be using today

Developer tooling



AWS Cloud9

Focus of this workshop



Amazon  
EventBridge



AWS  
Step Functions



AWS  
IoT Core

Deployed with the  
core template



AWS  
Lambda



Amazon API  
Gateway



Amazon  
S3



Amazon  
SNS



Amazon  
DynamoDB

# AWS Cloud9



- Fully featured cloud-based IDE
- Integrated tools for serverless development
- Built-in terminal and temp space
- Provisioned bandwidth on AWS network (not dependent on Wi-Fi)
- This workshop is 100% browser-based
- Please do not use your local IDE or terminal



# AWS re:Invent

**1,920 orders**

**71 drinks per hour**

**3 minutes 34 seconds further reading**



# LEAP Saudi Arabia

**1,310 orders**

**63 drinks per hour**

**2 minutes further reading**







# Today's adventure

## Setup

Deploy the backend core resources

## Module 1: Building the workflow

Build the order processing workflow that manages the drink orders through production

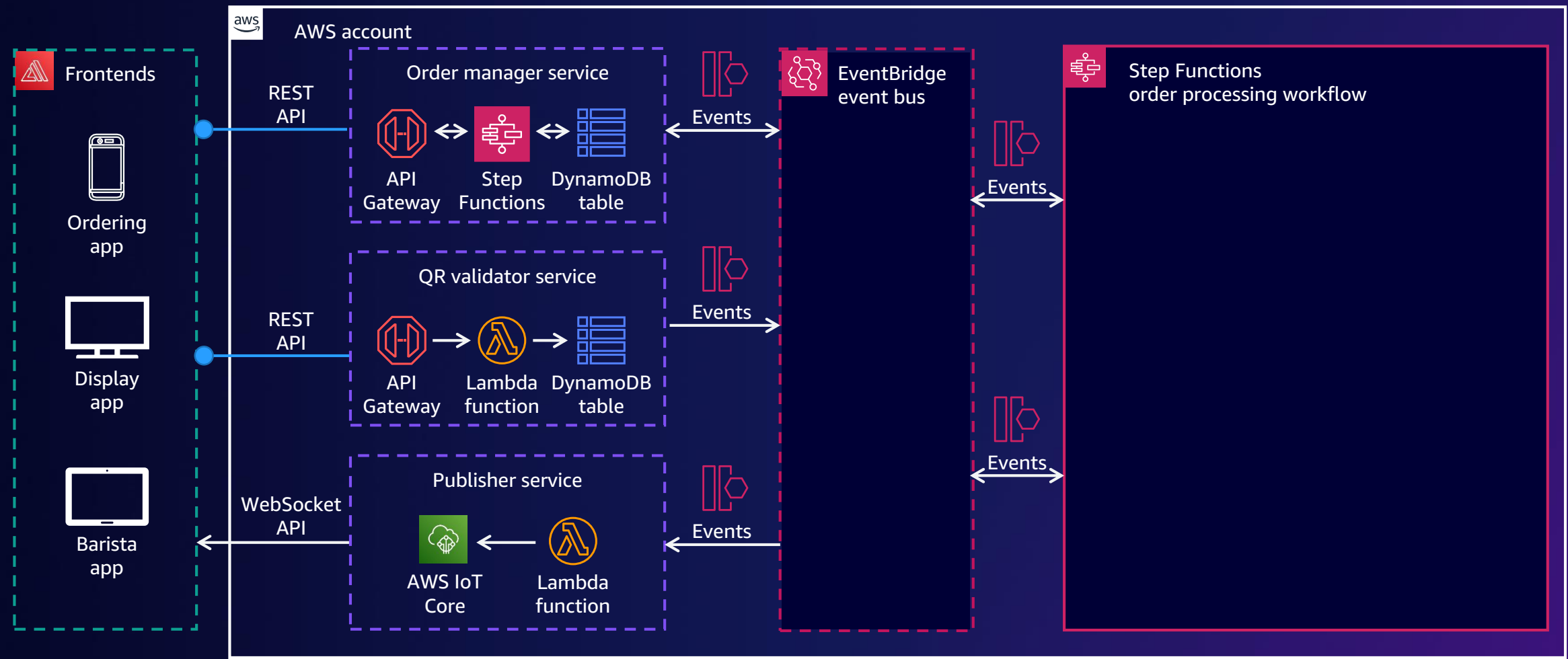
## Module 2: Routing events

Create event rules to route events across microservices

## Module 3: Configuring the frontend applications

Configure the frontend applications to connect to the backend that you've built so far, and send some test orders

# Setup – Deploy the core template



# Today's adventure

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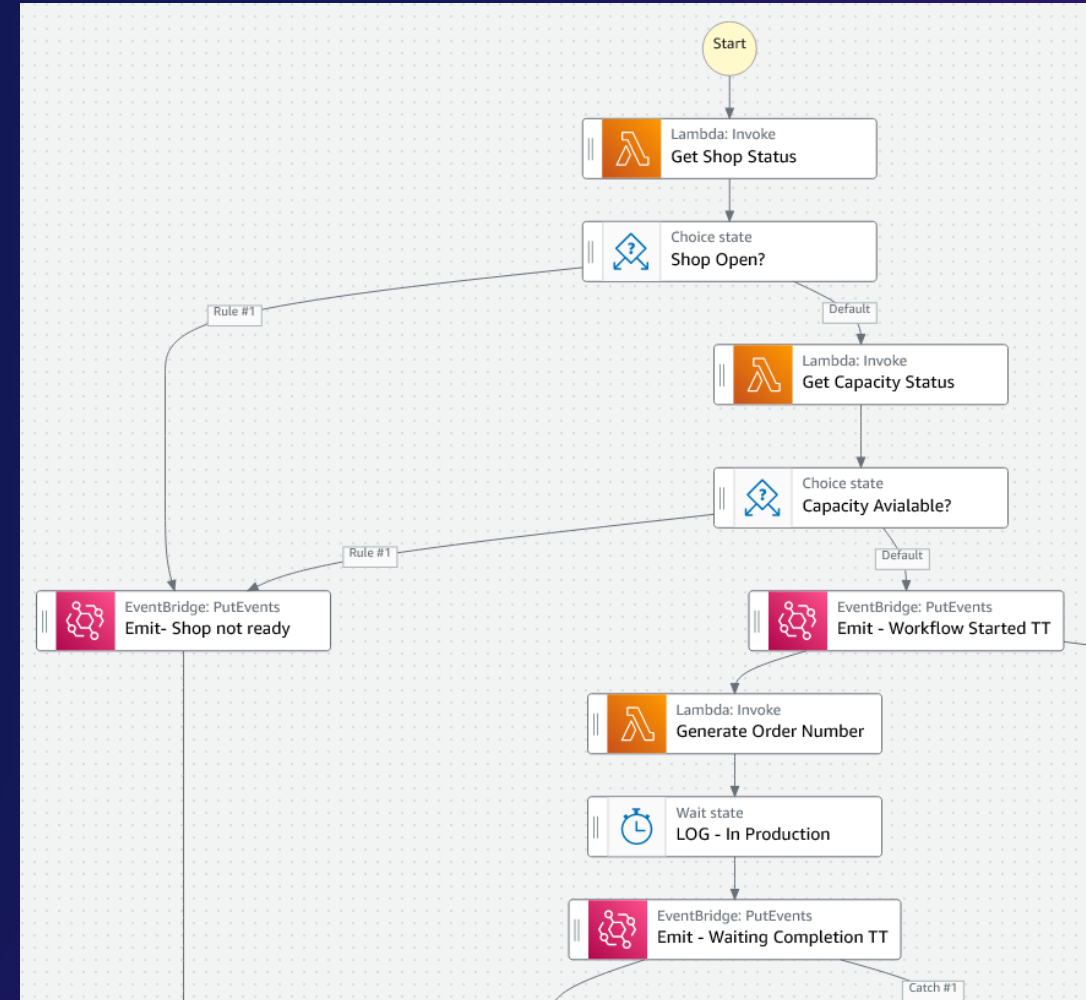
# Order processor service

Orchestrates each order from start to completion

# Managing each coffee's journey

USING AWS STEP FUNCTIONS TO MANAGE EACH WORKFLOW STEP COMPLETION

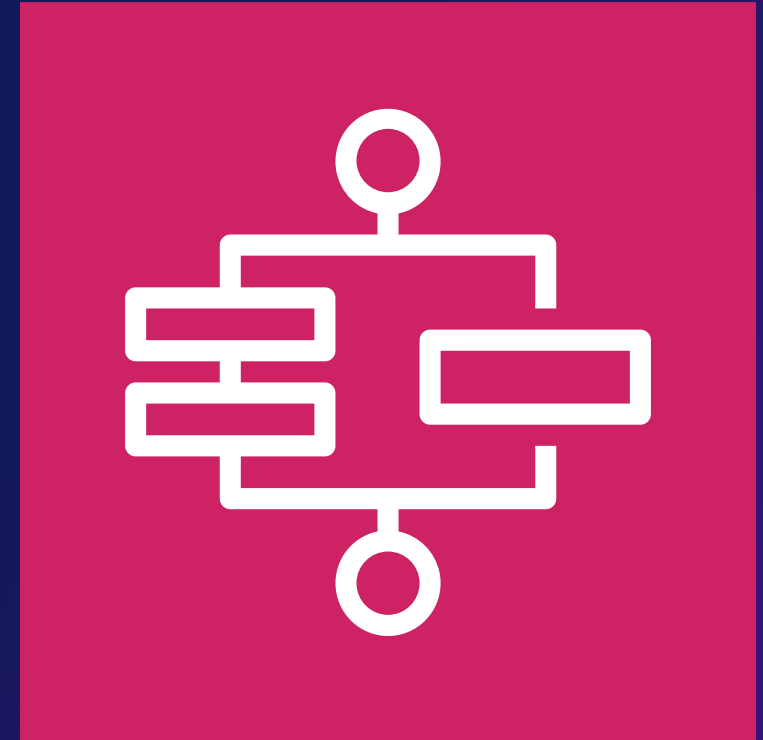
- Workflow helps ensure store is open and baristas have capacity
- Allows customers 5 minutes to order
- Allows barista 15 minutes to complete order
- Uses Lambda functions for custom logic; uses direct service integrations otherwise



# AWS Step Functions

FULLY MANAGED STATE MACHINES ON AWS

- Resilient workflow automation
- Built-in error handling
- Powerful AWS service integration
- First-class support for integrating with your own services
- Auditable step completion history and visual monitoring





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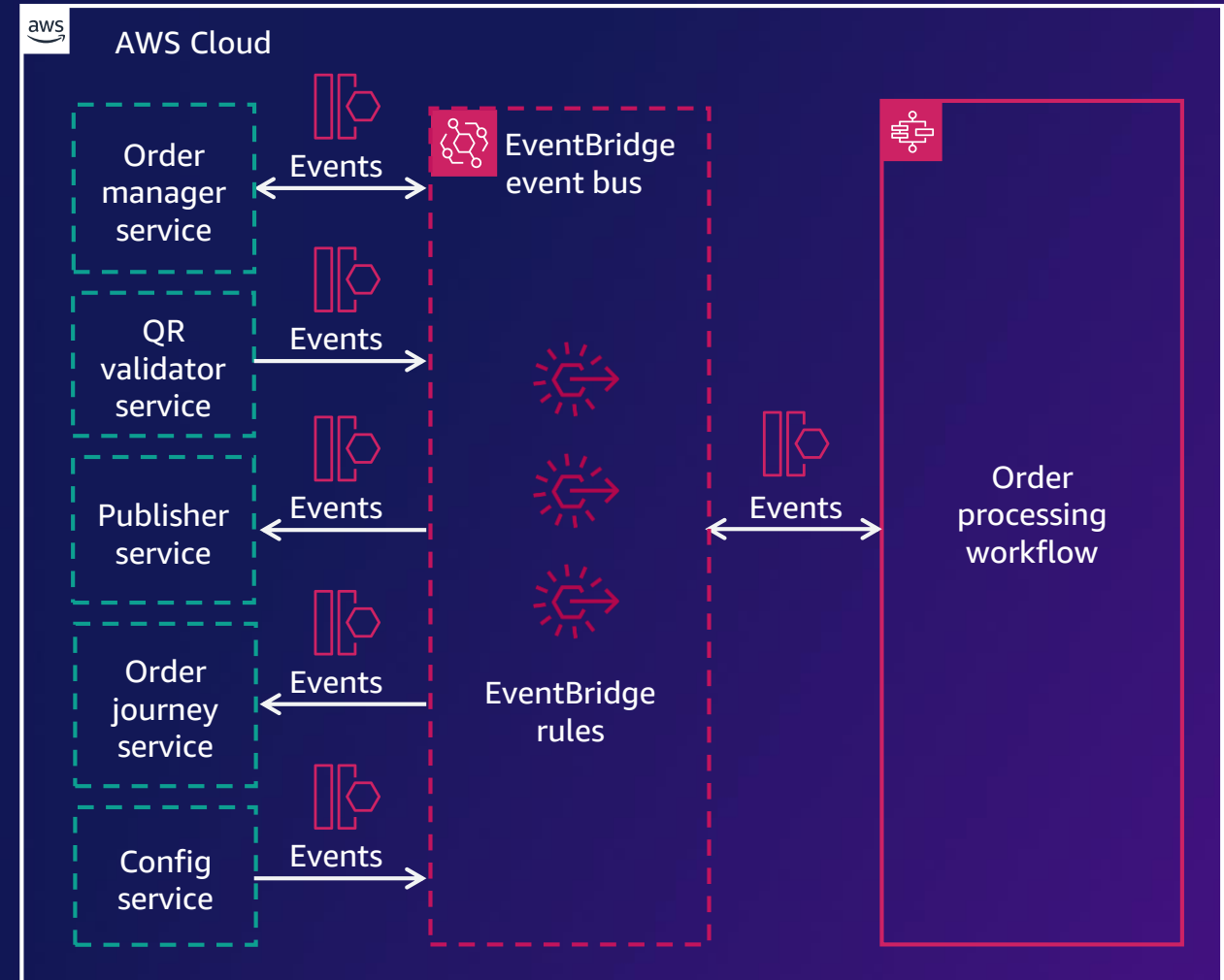
## Module 2: Routing events

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Configure the frontend applications to connect to the backend that you've built so far, and send some test orders

# Communicate between microservices using events





# Amazon EventBridge

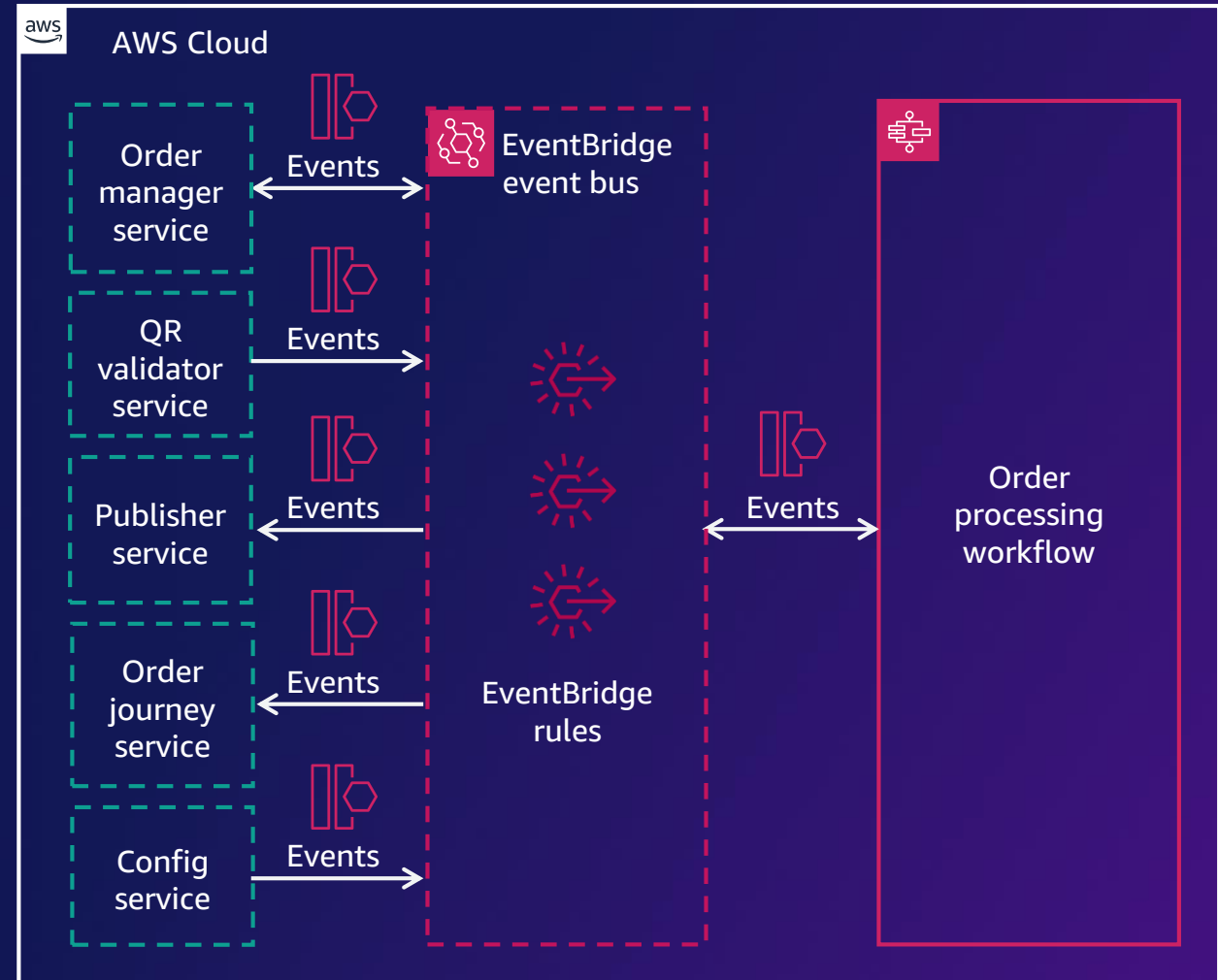
A serverless event bus service  
for AWS services, your own  
applications, and SaaS providers

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

# Event-driven architectures

## USING AMAZON EVENTBRIDGE FOR CHOREOGRAPHING MICROSERVICES

- Event flow drives the application
- Events choreograph the services, while Step Functions orchestrates the transactions
- Add new microservices as event consumers without changing existing code
- Microservices emit events independently of consumers



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# The frontend applications

VUE.JS APPS HOSTED WITH AWS AMPLIFY CONSOLE

## 1. Ordering app

- Loads menu
- Scans barcode to get order token
- Sends order
- Displays updates

## 2. TV display app

- Shows current barcode
- Receives order status updates
- Listens for store open/close events

## 3. Barista app

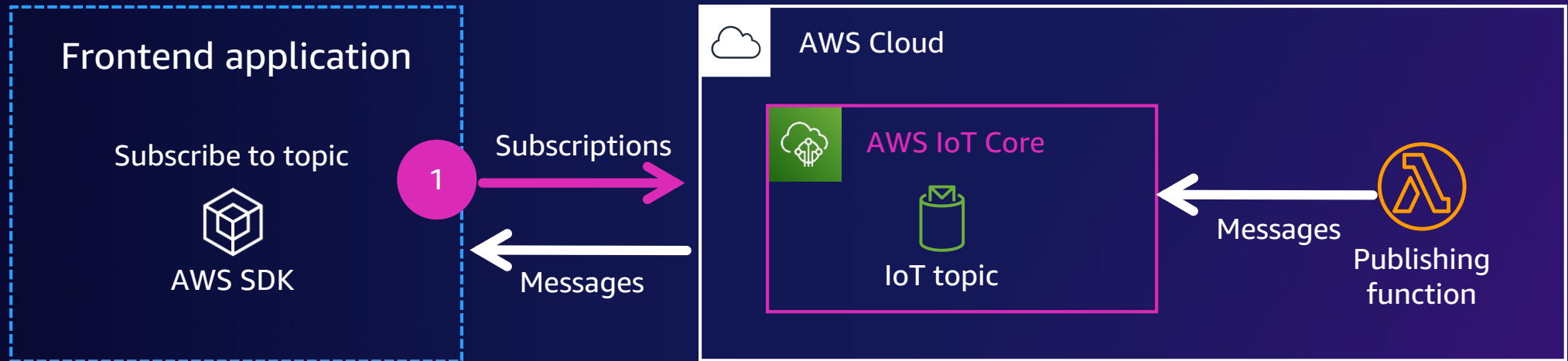
- Shows incoming orders
- Activates order completion or cancellation
- Activates store open/close events

# Handling async responses with real-time updates



# Using AWS IoT Core for real-time messaging

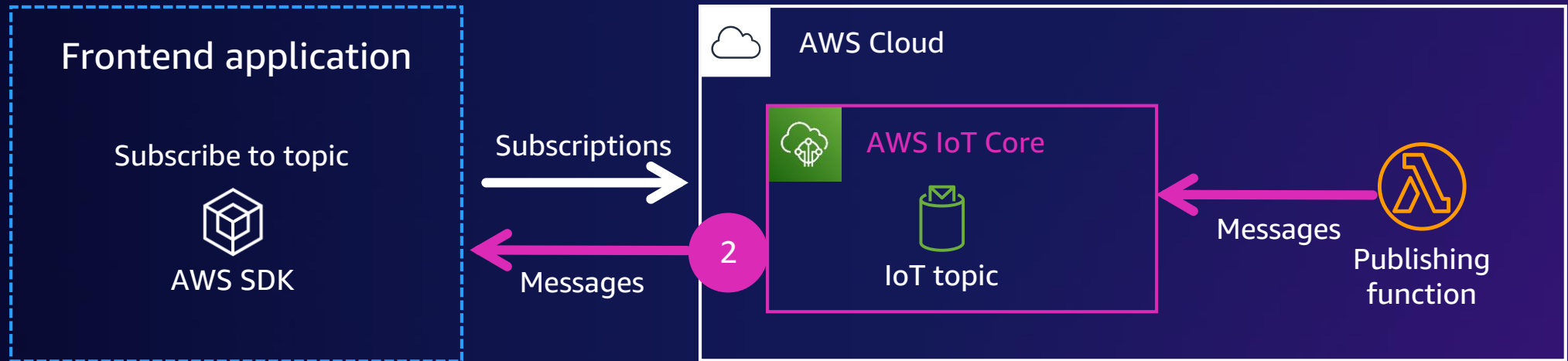
Frontend application uses pub-sub to “listen” for event updates



Frontend uses AWS SDK to subscribe to a topic based on user's unique user ID

# Using AWS IoT Core for real-time messaging

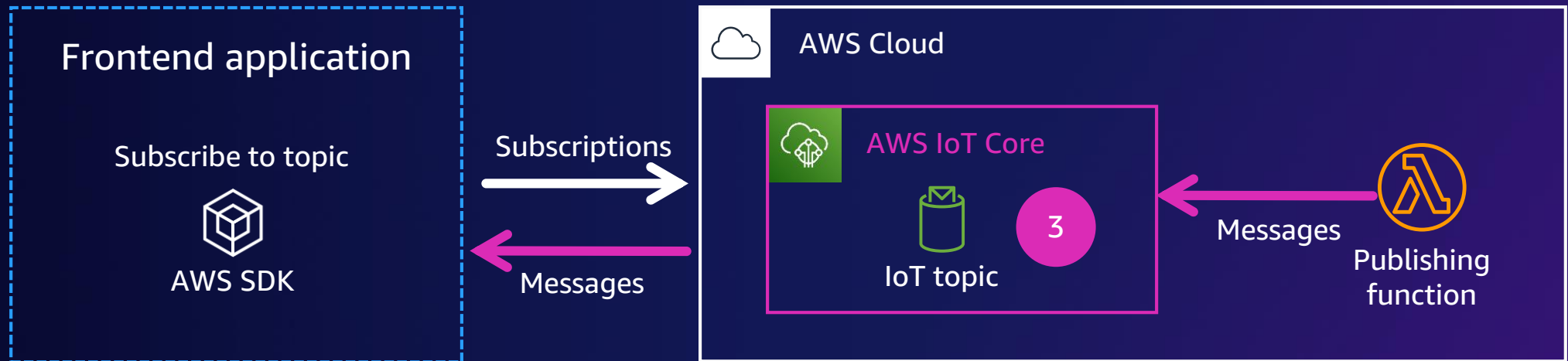
Frontend application uses pub-sub to “listen” for event updates



Receives messages published by the backend to this topic

# Using AWS IoT Core for real-time messaging

Frontend application uses pub-sub to “listen” for event updates



Messages are categorized using topics; topic names are UTF 8 encoded strings

# Let's get started



**serverless**presso

<https://s12d.com/coffee-workshop>



**serverless**presso

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# Thank you!

Sam Dengler

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