Serverless Backend for Frontend on AWS

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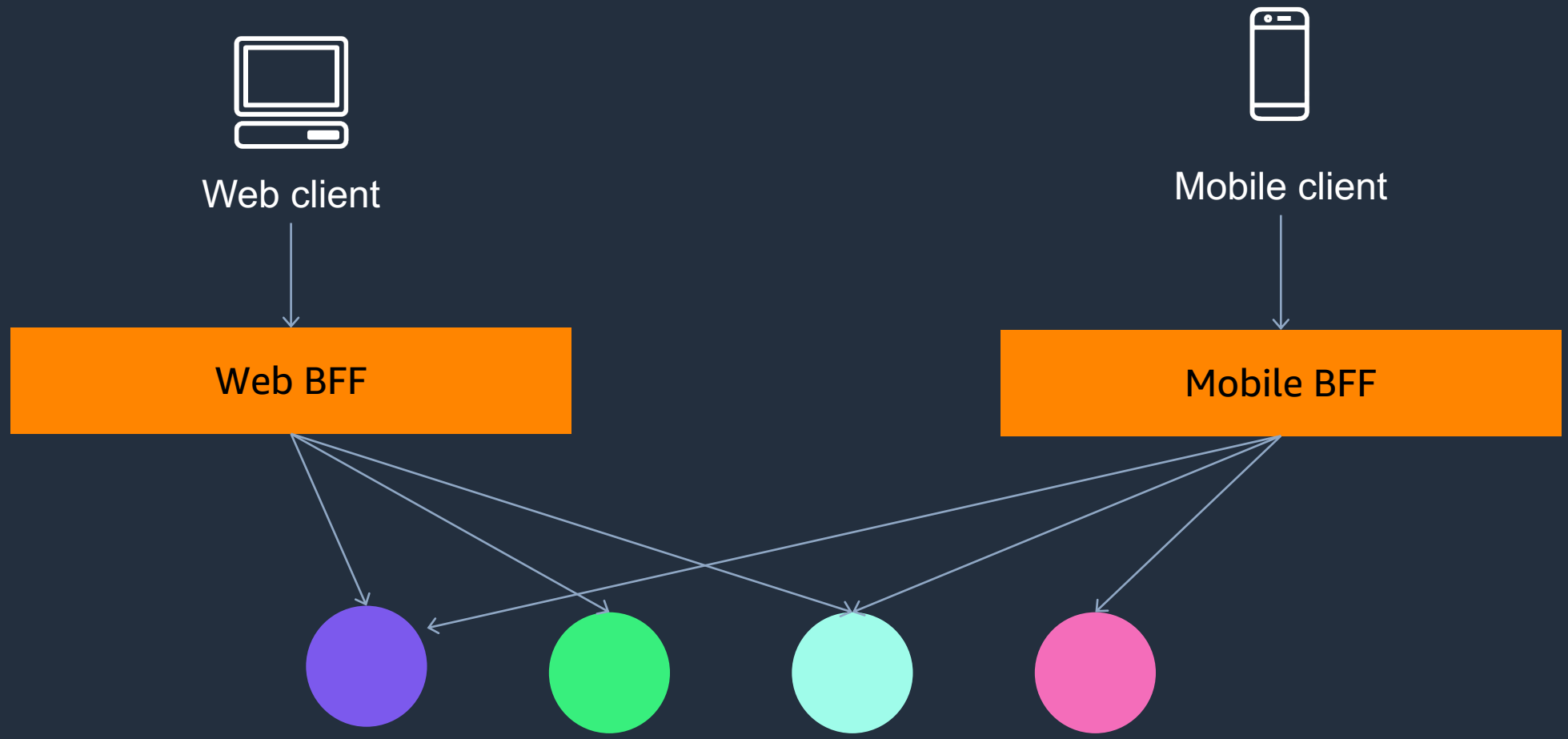
AWS

> “Backends For Frontends solve a pressing concern for mobile development when using microservices.”

Sam Newman

Quick recap of the pattern



Build BFF with AWS Serverless services

What does serverless mean?

No infrastructure provisioning, no management

Automatic scaling

Pay for use

Highly available and secure

Serverless Portfolio

APPLICATION PRIMITIVES – COMPUTE AND DATASTORES


Amazon S3


AWS Lambda


AWS Fargate


Amazon DynamoDB


Amazon Aurora Serverless


Amazon Kinesis

APPLICATION INTEGRATION


Amazon SNS


Amazon API Gateway


AWS Step Functions

Amazon EventBridge


Amazon SQS


AWS AppSync

Developer Tools


AWS CloudFormation


AWS Cloud9


AWS CodePipeline


AWS Config


AWS CloudTrail


Amazon CloudWatch


AWS X-Ray


AWS Serverless Application Repository

SECURITY AND ADMINISTRATION


AWS IAM


AWS SSO


Amazon GuardDuty


Amazon Inspector


Amazon VPC

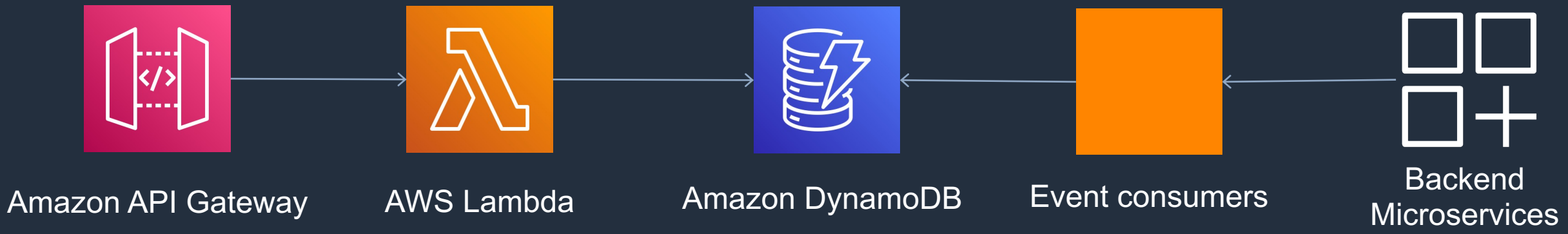

AWS WAF


AWS Shield


Amazon Cognito

How to start

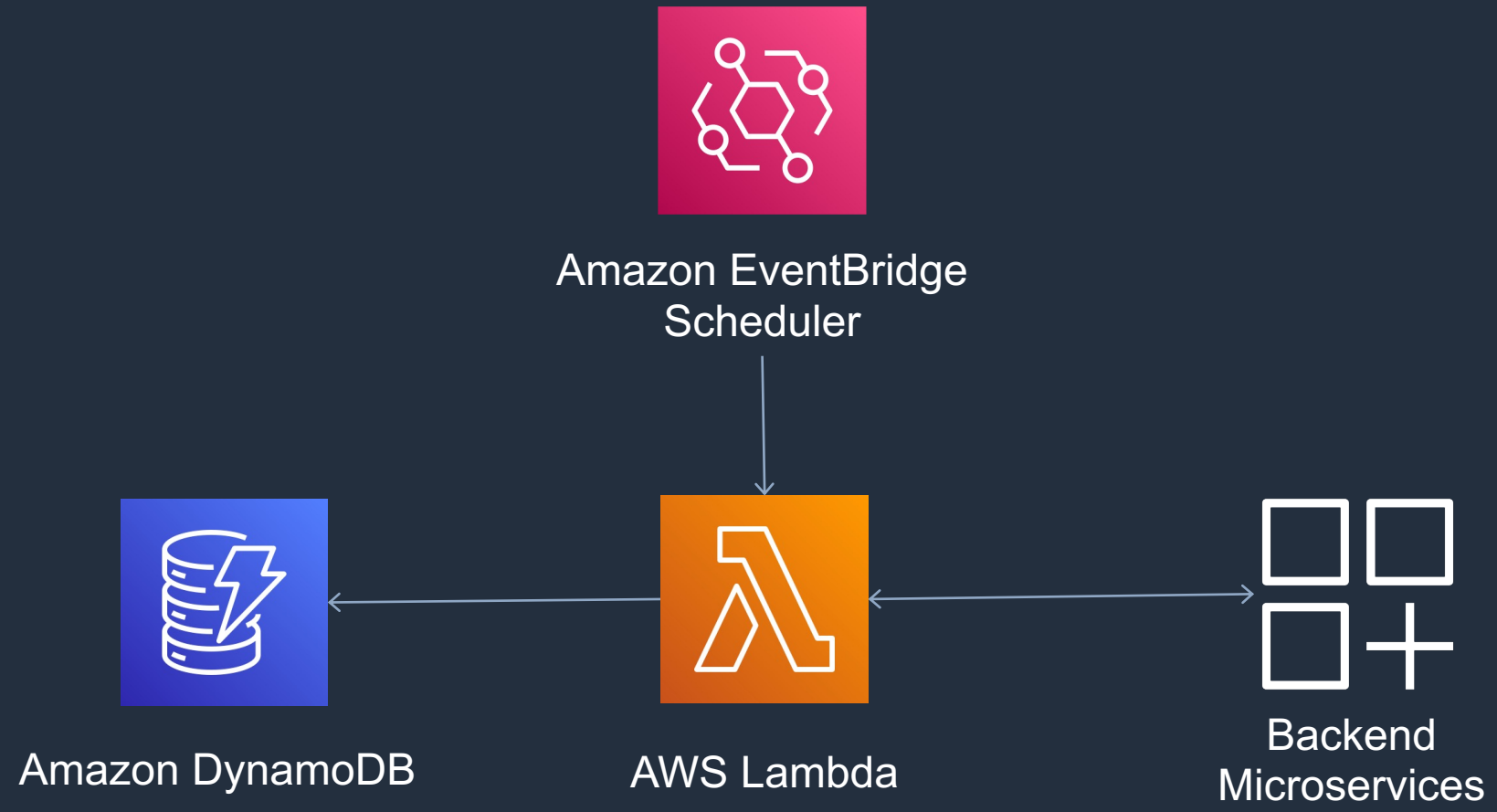
How to get the data – BFF event consumers

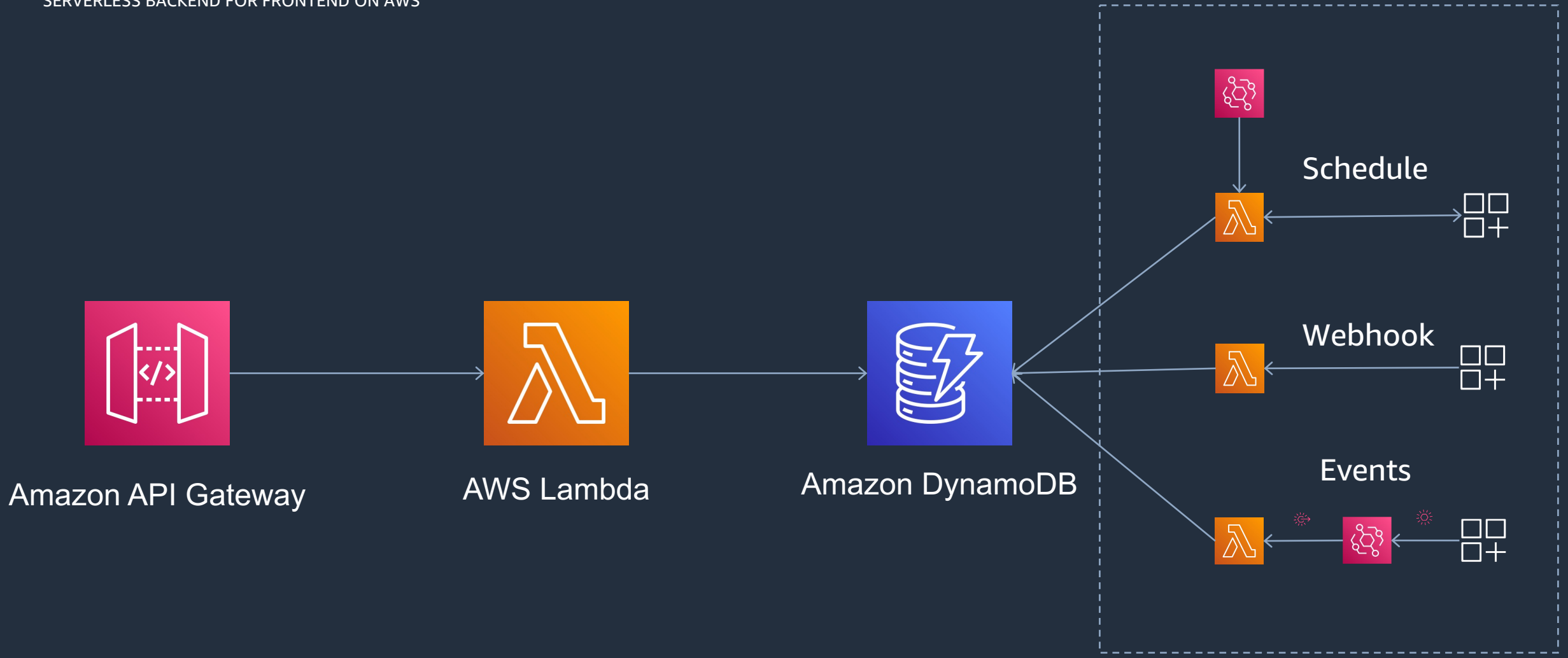


Event consumers – with Amazon EventBridge

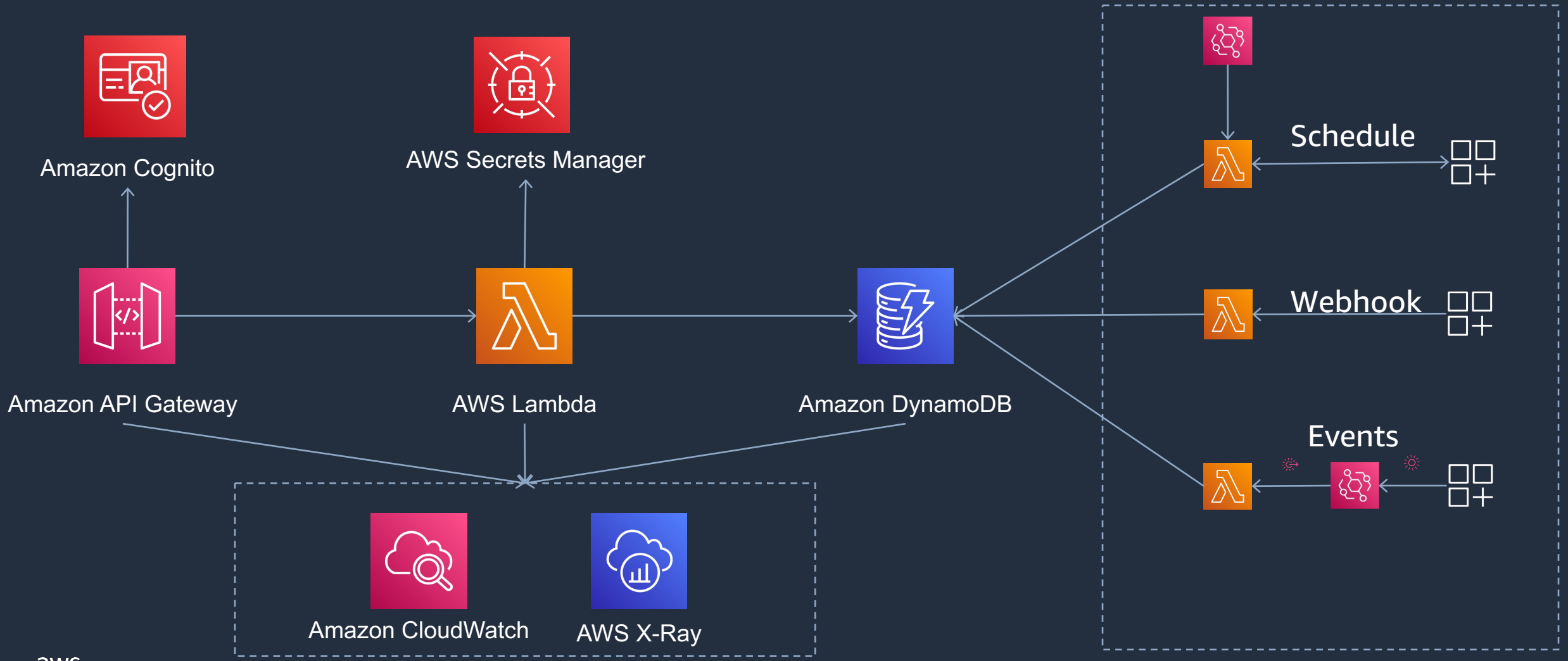
Event consumers – webhook

Event consumers – polling





Security and Observability



What is AWS Step Functions?

What is AWS Step Functions?

A serverless workflow orchestration service offered by AWS.

A workflow built on AWS Step Functions...

...is built using a state machine.

...is composed of steps called states.

...moves from one state to another via a state transition.

...is written using Amazon States Language or ASL (think of it as the workflow assembly language).

...can be used to orchestrate multiple AWS services.

Step Functions benefits

Build and update apps quickly

AWS Step Functions lets you build visual workflows that enable fast translation of business requirements into technical requirements. You can build applications in a matter of minutes, and when needs change, you can swap or reorganize components without customizing any code.

Write less code

AWS Step Functions manages the logic of your application for you, and implements basic primitives such as branching, parallel execution, and timeouts. This removes extra code that may be repeated in your microservices and functions.

Improve resiliency

AWS Step Functions manages state, checkpoints and restarts for you to make sure that your application executes in order and as expected. Built-in try/catch, retry and rollback capabilities deal with errors and exceptions automatically.

Visual workflows

Define

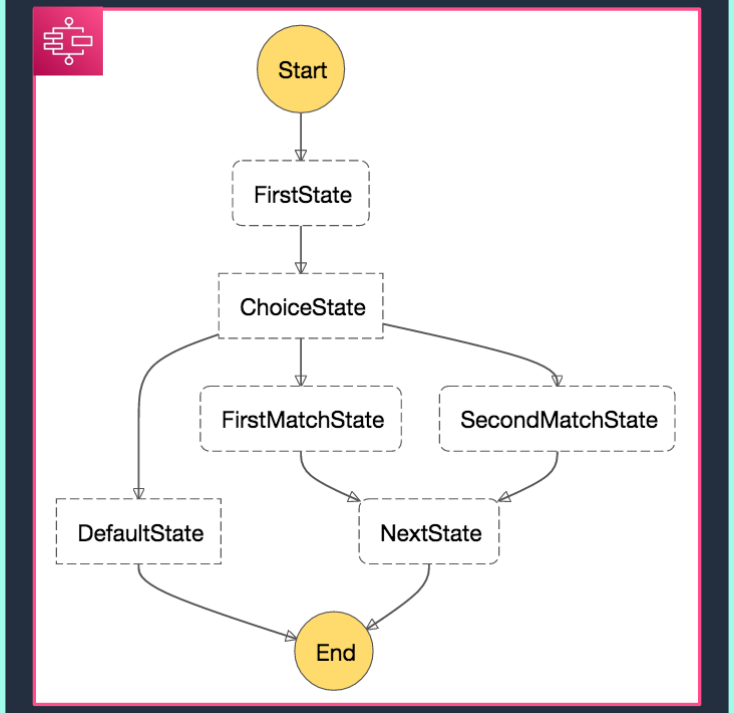
Amazon States Language
JSON

```
Code
{
  "Comment": "An AWL example using a choice state.",
  "StartAt": "FirstState",
  "States": {
    "FirstState": {
      "Type": "Task",
      "Resource": "arn:aws:lambda:REGION:ACCOUNT_ID:function:FUNCTION_NAME",
      "Next": "ChoiceState"
    },
    "ChoiceState": {
      "Type" : "Choice",
      "Choices": [
        {
```

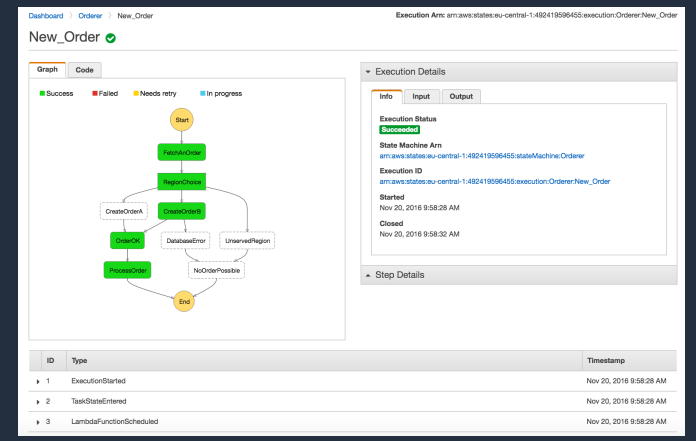
CDK
TypeScript, JavaScript, Python, Java, C#

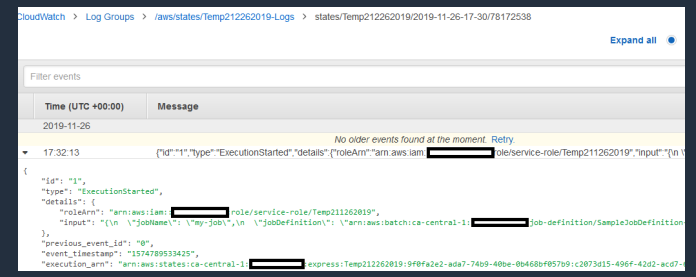
Data Science SDK
Python

Visualize



Execute and Monitor





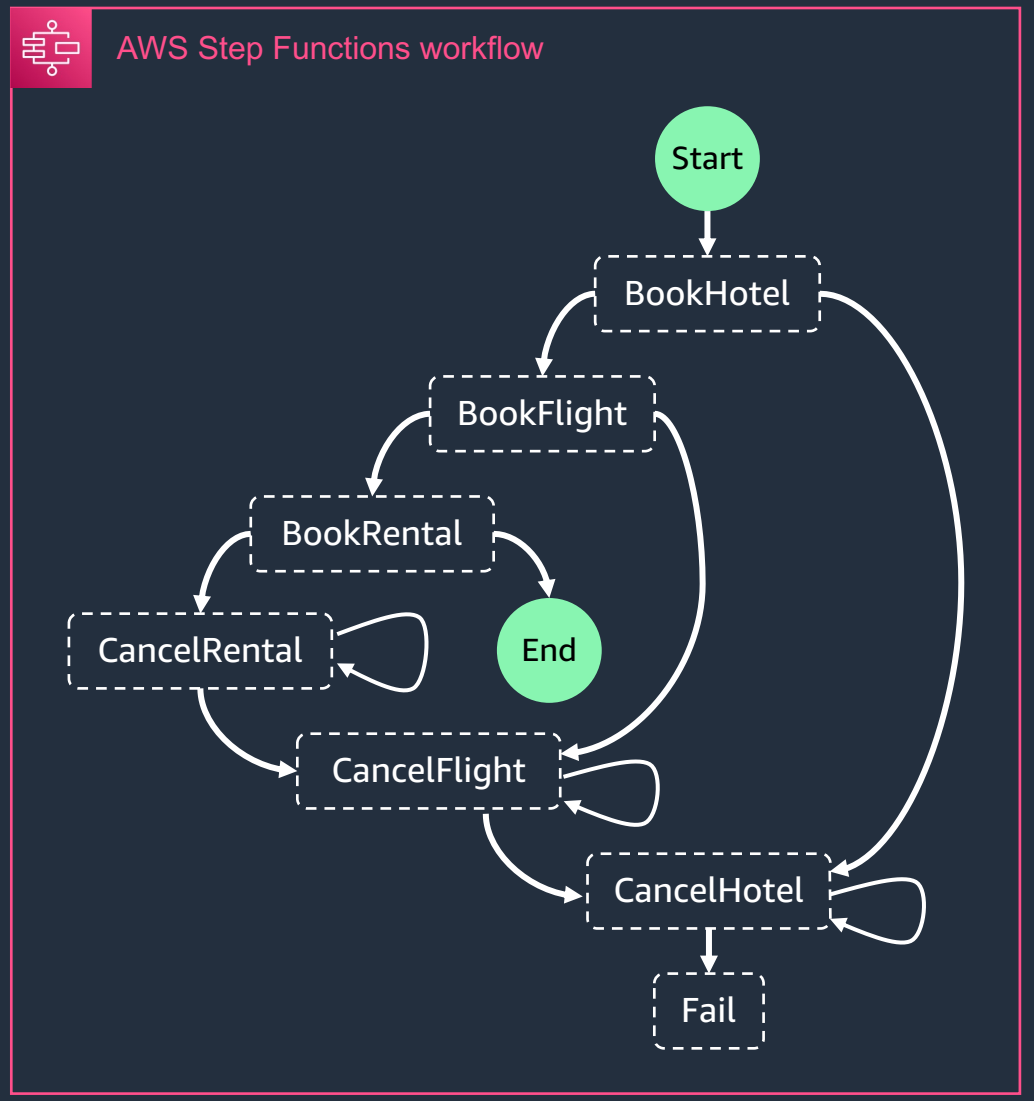
Example Use Case

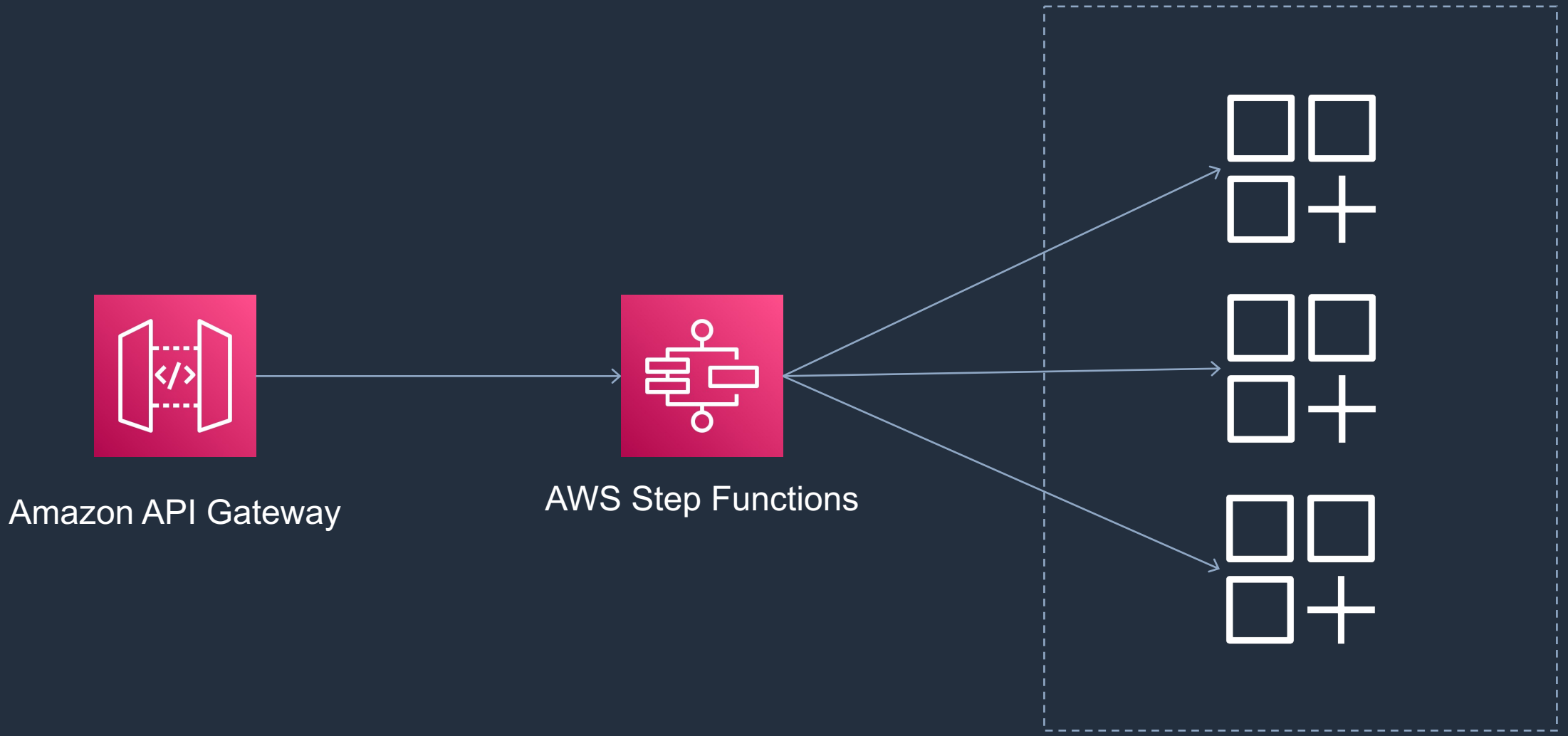
Suppose I want to book my vacation to the **Grand Canyon**…

…but unwind my reservations if I can't rent a car.

Saga Pattern

Roll-back work done by sequence of distributed transactions.





Useful resources

https://serverlessland.com/patterns

https://www.jeremydaly.com/serverless-microservice-patterns-for-aws/

https://aws.amazon.com/architecture/well-architected/?wa-lens-whitepapers.sort-by=item.additionalFields.sortDate&wa-lens-whitepapers.sort-order=desc

https://docs.aws.amazon.com/wellarchitected/latest/serverless-applications-lens/welcome.html

https://docs.aws.amazon.com/lambda/latest/dg/lambda-typescript.html

https://github.com/aws-samples/serverless-typescript-demo

Thank you!

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