

Lambda Introduction

Lambda

What is Serverless

- Serverless ~ No need to manage servers
- Developers focus on writing code and deploy functions
- Serverless also know as Function as a Service (FaaS)
- When talking about **Serverless** in AWS, people think about **Lambda** first

Lambda

- Lambda is Serverless compute service
- No need to manage servers anymore
- Limited running period (short execution, upto 15 mins)
- Run on-demand
- Auto allocates resources (CPU, RAM) for any scale of traffic

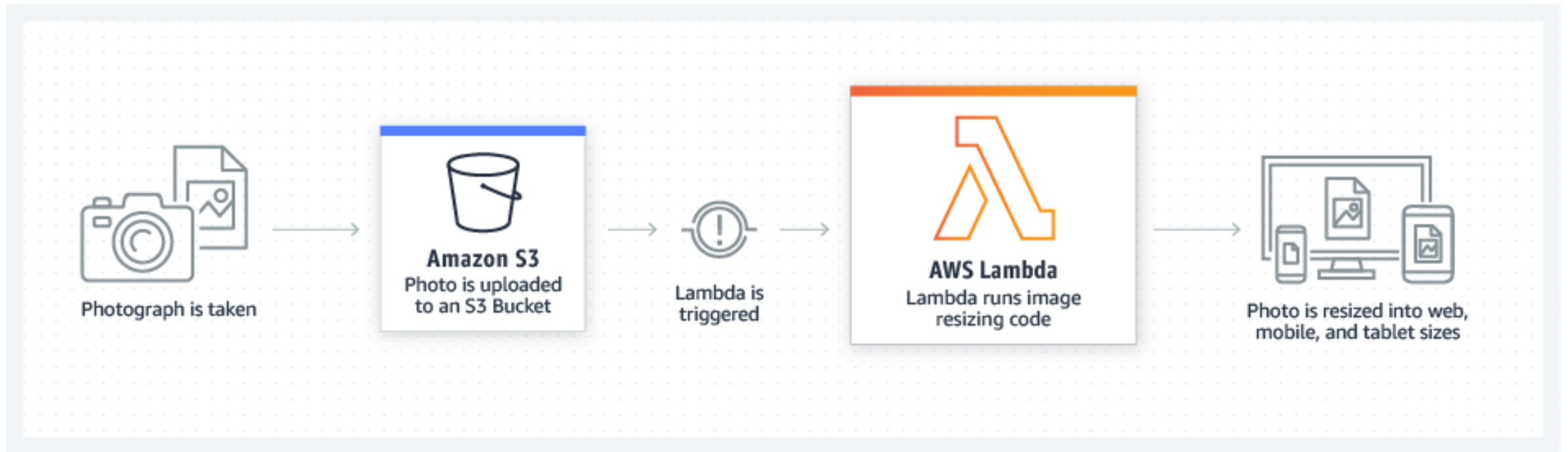
Benefits of AWS lambda

- Pay for only what you use.
 - Pay per requests + Compute time duration (round up **1ms**)
 - Free tier of 1,000,000 Lambda requests and 400,000 GB-seconds of compute time per month
- Easy to intergrate with other AWS services
- Support many types of programing languages
- Currently supports up to 10GB of RAM per functions

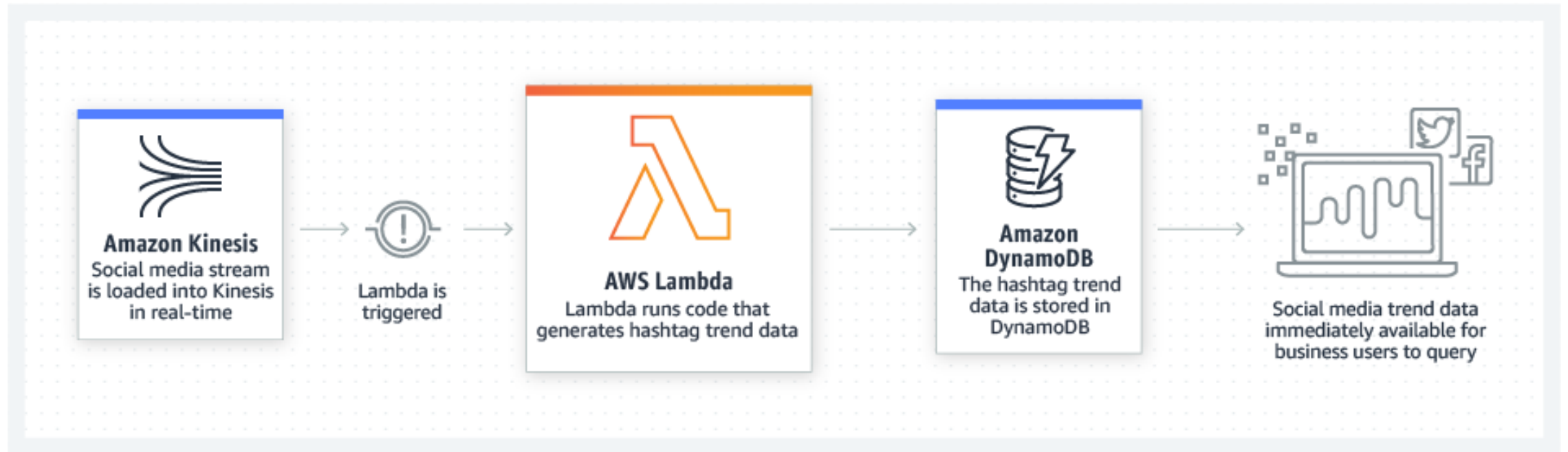
AWS Lambda language support

- Node.js
- Python
- Java
- C#
- Golang
- Ruby
- Custom runtime

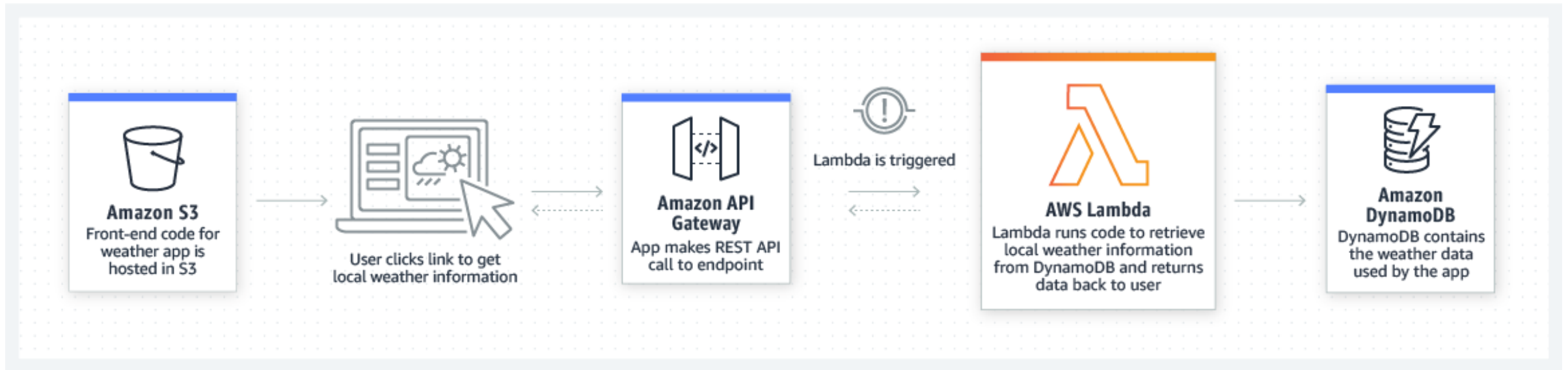
Lambda in Action – S3



Lambda in Action - Kinesis



Lambda in Action – API Gateway



Lambda@Edge

Lambda@Edge

- Lambda functions are deployed alongside with **CloudFront** (in **Global Edge Location**)
- Using to run code closer to users of application
- For filtering/modification/customize the requests that reach to **CloudFront**



Lambda@Edge (cont.)

- Using **Lambda@Edge** to change CloudFront requests and responses

- After receiving the requests from a client
- Before sending requests to the origin
- After receiving the responses from the origin
- Before sending responses to the client



Use cases

- Bot Mitigation at the Edge
- User Authentication and Authorization
- Website Security and Privacy
- User Authentication and Authorization
- User Tracking and Analytics
- ...

Ref: <https://aws.amazon.com/lambda/edge/>

Exam Tips

- **Lambda@Edge** is a CloudFront feature
- Lambda@Edge is deployed into **Global Edge Location**
- Using for Filtering/Customizing requests, responses to **CloudFront**

Lambda Limit

Lambda Limitation

	Quota		Increased up to
Execution	Function memory allocation	128 MB to 10,240 MB, in 1-MB increments.	Hard limit
	Function timeout	900 seconds (15 minutes)	Hard limit
	Environment Variables	4 KB	Hard limit
	Disk Capacity (/tmp)	512 MB	Hard limit
	Concurrent executions	1,000	Hundreds of thousands
Deployment	Function deployment package	50 MB zipped, 250 MB unzipped	Hard limit
	Container Image	10 GB	Hard limit

Exam Tips

- Concurrency limitation is 1000 by default
- Invoke functions return code **429** => Throttling requests, need to increase concurrency instances
- Function timeout is 900 seconds (15 minutes)

SAM

What is SAM?

- SAM stands for Serverless Application Model.
- CloudFormation extensions optimized for serverless applications
- New types that best fit for API gateway, DynamoDB, Lambda functions
- Run Serverless Applications locally using Docker
- Package and Deploy using **CodeDeploy**

