WHAT IS AWS LAMBDA?

ABOUT ME:

Thaw Zin Myo

Now:

- Working as Junior DevOps Engineer
- Working and Studying with top-notch technologies - Cloud, Containerization, Microservices, Serverless, Observability, Cost Optimization and IaC

At BIM:

- Worked as Solutions Engineer
- Experienced with Cloud, Network, Storage, Endpoint Security Solutions, and Server Technology for Banks, Enterprise Company

At SCS:

- Worked as Infrastructure Engineer
- Experienced with Network, VPN Solutions, Storage, Server Technology, and EMV Personalization Systems for Banks, Enterprise Company

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Lambda Explained

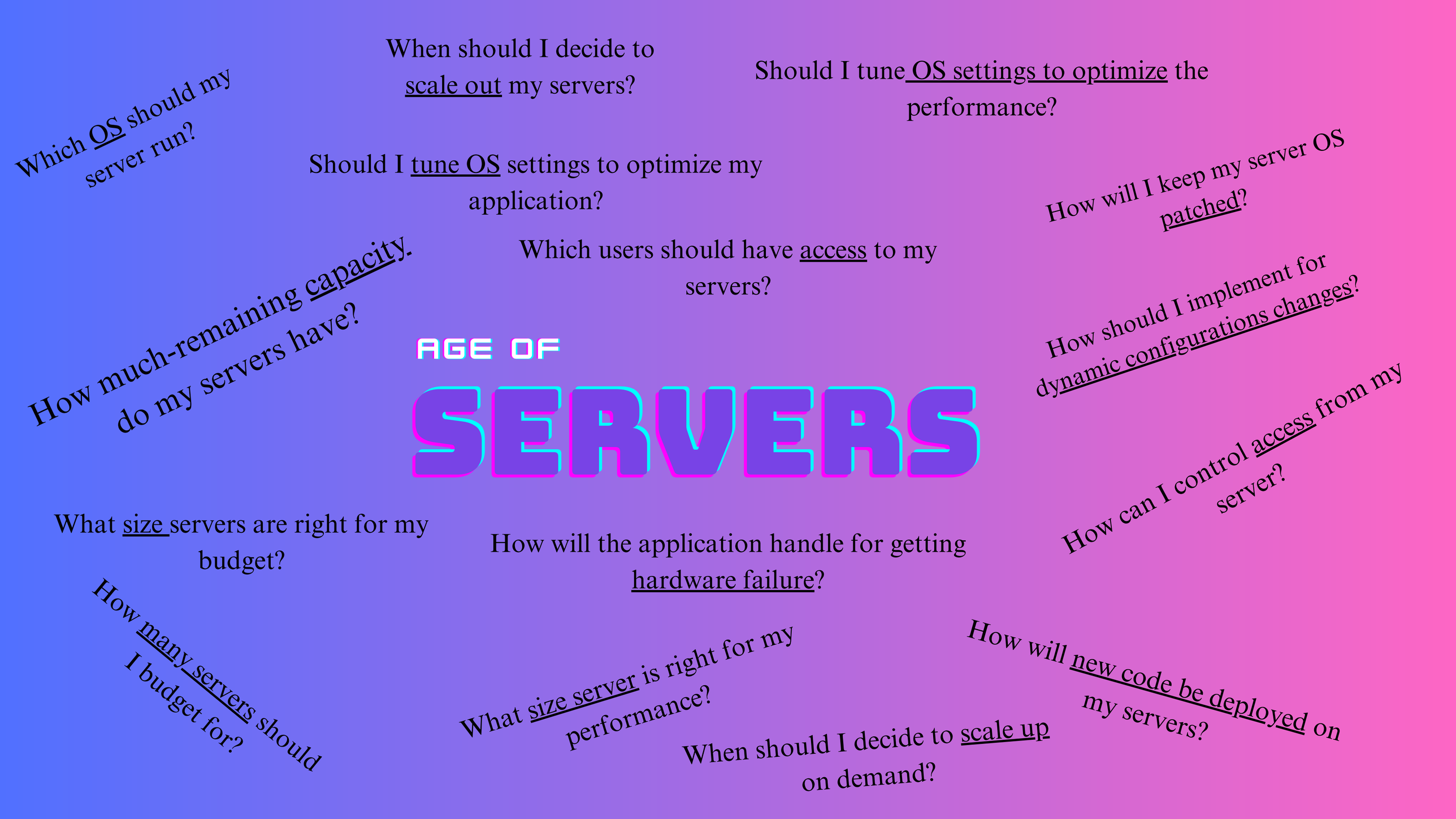
What is it? How's to apply?

Agenda:

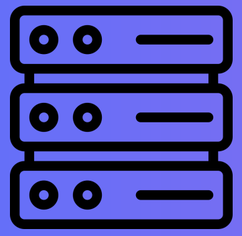
- Before Serverless!
- What is Serverless?
- What is Lambda?
- What are the benefits of Lambda?
- Its' function and feature!
- Limitation!
- Demo!
- Quiz

Before Serverless?

How Serverless Architecture patterns with AWS Lambda are the next evolution of Application Design?


When should I decide to scale out my servers?
Should I tune OS settings to optimize the performance?
Which OS should my server run?
Should I tune OS settings to optimize my application?
How will I keep my server OS patched?
How much-remaining capacity. do my servers have?
Which users should have access to my servers?
How should I implement for dynamic configurations changes?
AGE OF
SERVERS
How can I control access from my server?
What size servers are right for my budget?
How will the application handle for getting hardware failure?
How many servers should I budget for?
What size server is right for my performance?
How will new code be deployed on my servers?
When should I decide to scale up on demand?

What is Serverless?



No servers to provision or manage

Pay for Value
(charged only for execution time)

Scale with Usage

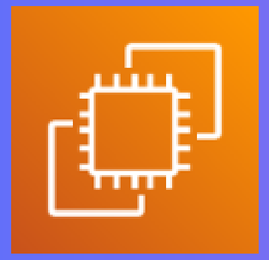
No idle/cold server
(run function code on demand)

Bring your own code
(provide function code to lambda)

Availability and Fault
tolerance build-in

WHAT IS AWS COMPUTE OFFERING?

Computing



Amazon Elastic Compute Cloud (Amazon EC2)

Amazon Elastic Container Service (Amazon ECS)

AWS Lambda

WHAT IS AWS LAMBDA?

Serverless, Stateless, Event-Driven Compute Service

"AWS Lambda lets you run code without provisioning or managing servers"

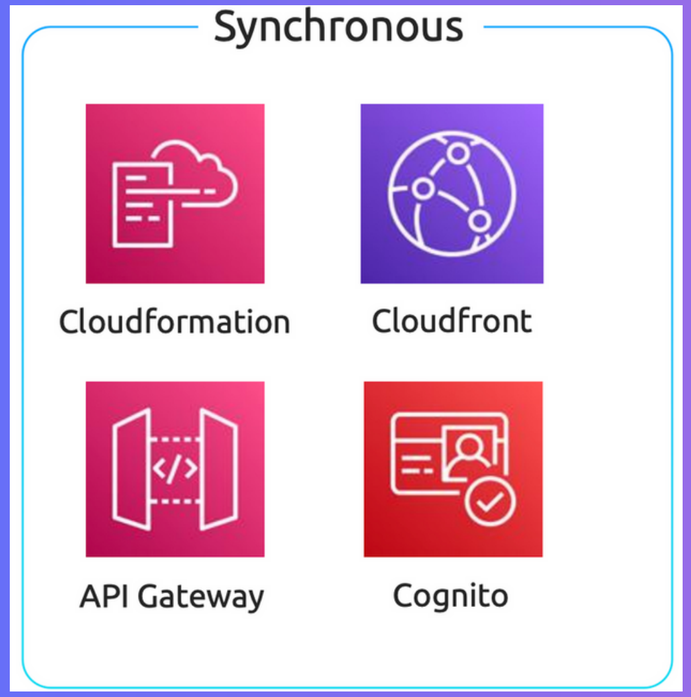
Supported Languages!

Event Sources

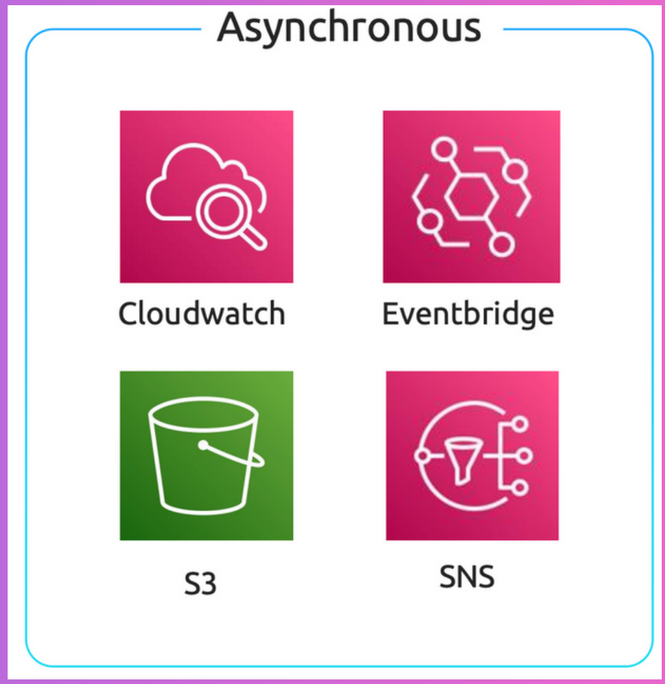
- S3
- API Gateway
- Kinesis
- SNS
- SQS
- CloudWatch
- DynamoDB
- Cognito
- etc...

ways to invoke lambda function

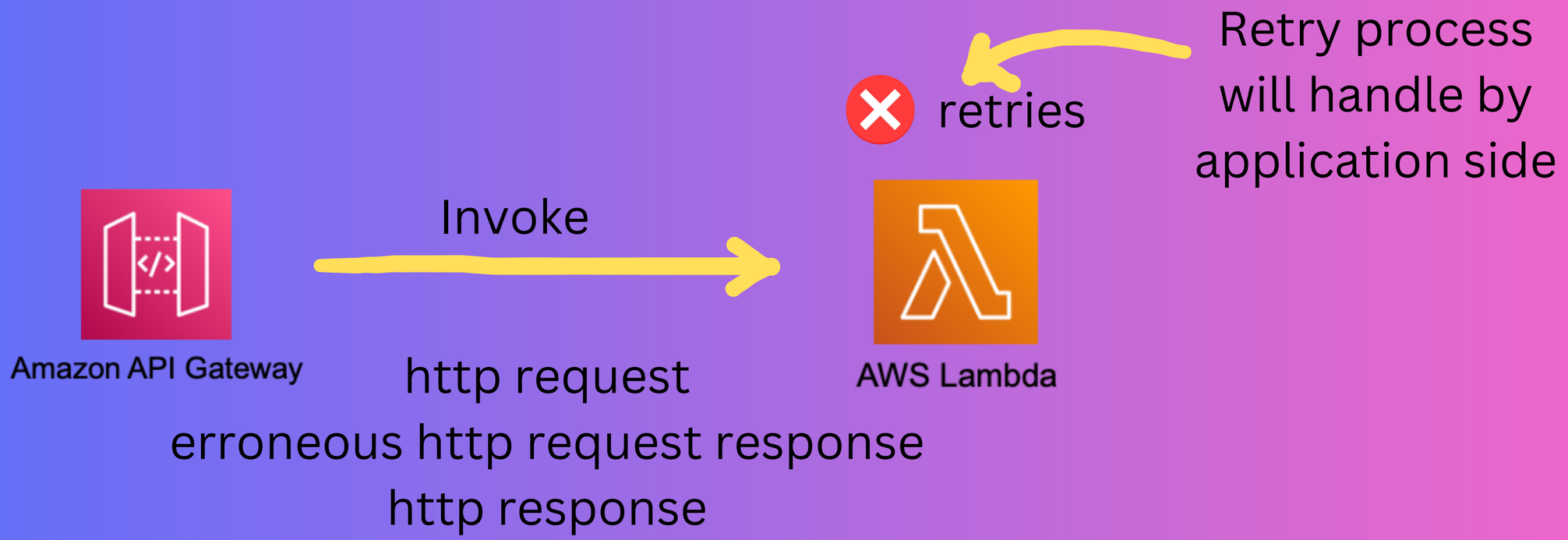
RequestResponse
(synchronous)



Event (asynchronous)



Push model source type: (Synchnorous)



Push model source type: (Asynchnorous)

Invocation permission

resource

Invoke

erroneous request

retries

After 3 retries,

AWS Lambda

Dead Letter Quqe

Execution Role

Amazon CloudWatch

Based on SUCCESS or FAIL

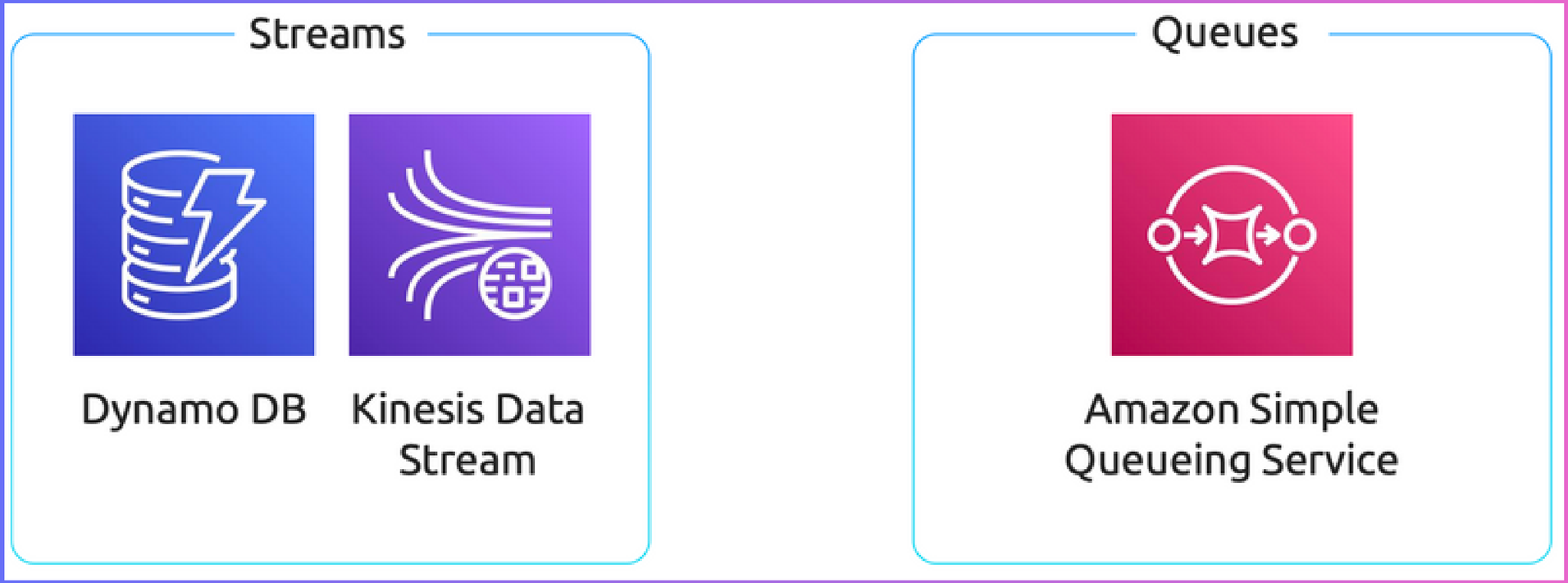
Destinations

Event-Bridge

SNS

erroneous can refer to code that contains bugs or errors that cause it to behave incorrectly or produce unexpected results

Pull Model

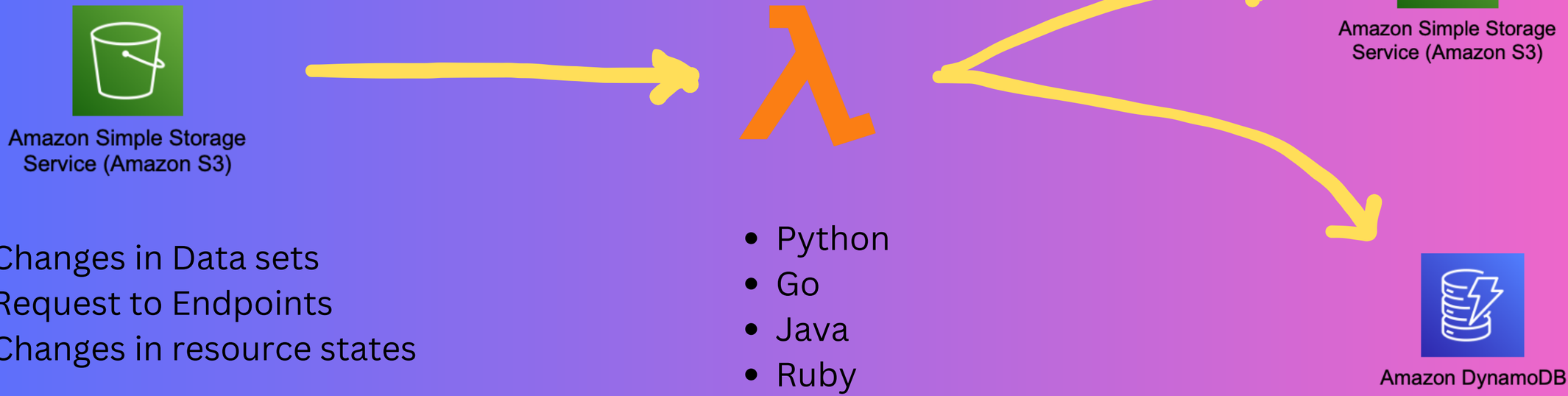

Streams
Dynamo DB
Kinesis Data Stream
Queues
Amazon Simple Queueing Service

Pull Model

Amazon Simple Queue Service (Amazon SQS)

AWS Lambda

Serverless Applications



- Changes in Data sets
- Request to Endpoints
- Changes in resource states

- Python
- Go
- Java
- Ruby
- C#
- Node.js

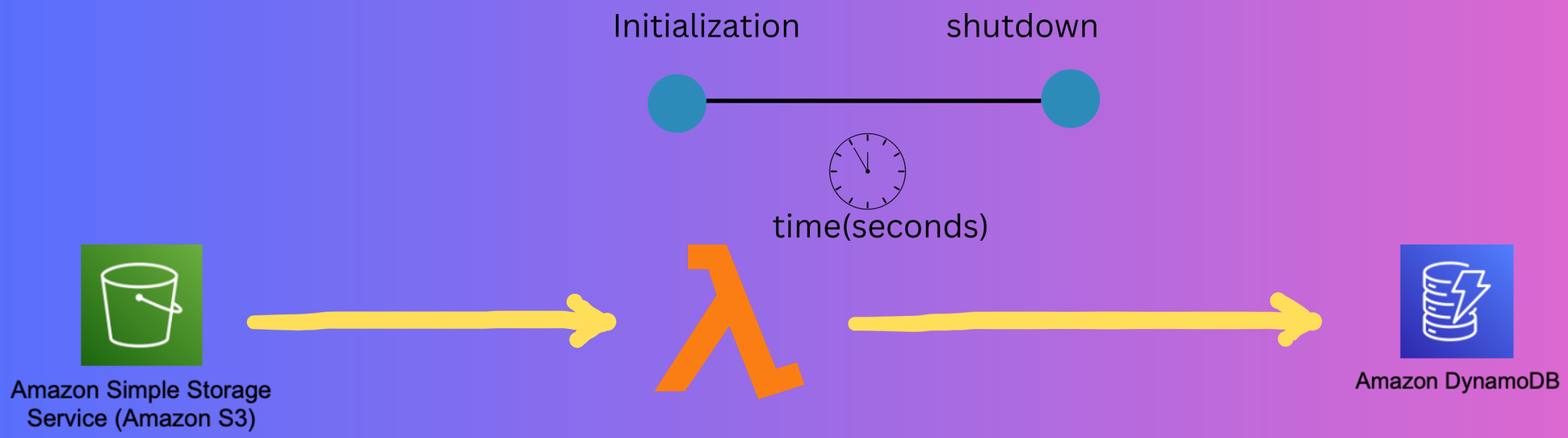
Pricing:

Monthly Free Tier:

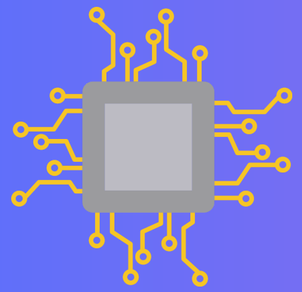
1 Million Requests
400,000 Gigabit Seconds

Parts of Lambda Cost:

1. Number of Requests
2. Gigabit Seconds (Amount of Time X Amount of Resources)



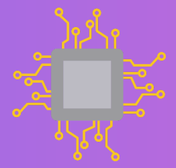
Gigabit Seconds



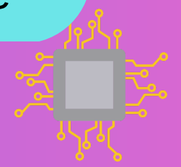
Memory

128 MB — 10240 MB

34% Better Price



x86



Graviton2

If your existing function has dependencies on the x86-based CPU instruction set, you need to create a new deployment package for the arm64 architecture, with dependencies recompiled for the ARM instruction set.

Ways to configure Lambda

AWS Management Console

AWS Command Line Interface (AWS CLI)

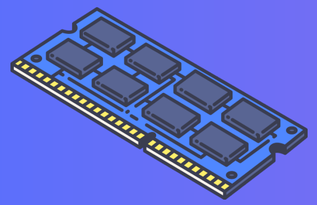
AWS Tools and SDKs

AWS CloudFormation

AWS Serverless Application Model

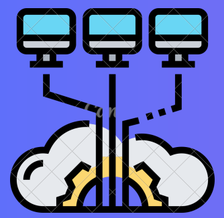
Limitations

- Can Only run for 15 minutes



- 10 GB RAM Limit

- 10 GB Storage Limit

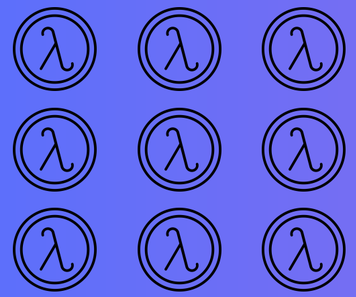


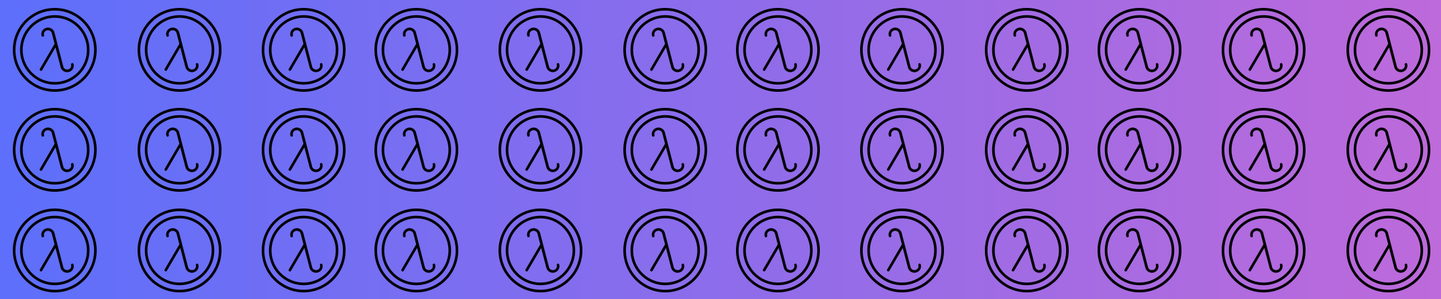
- 1000 Concurrent Limit

Reserved and Unreserved Concurrency

Concurrency

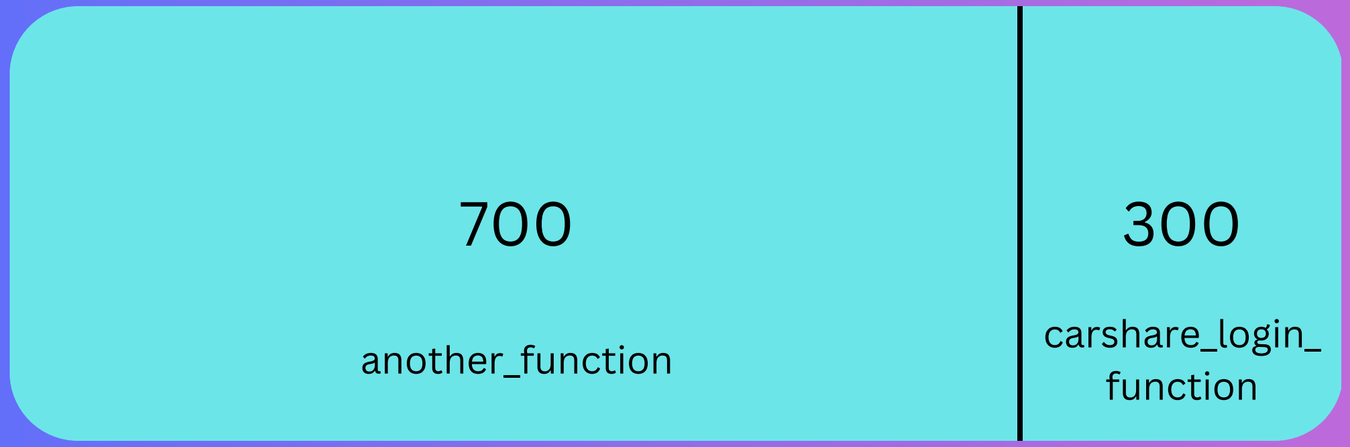
 = 1

 = 9

 = 36

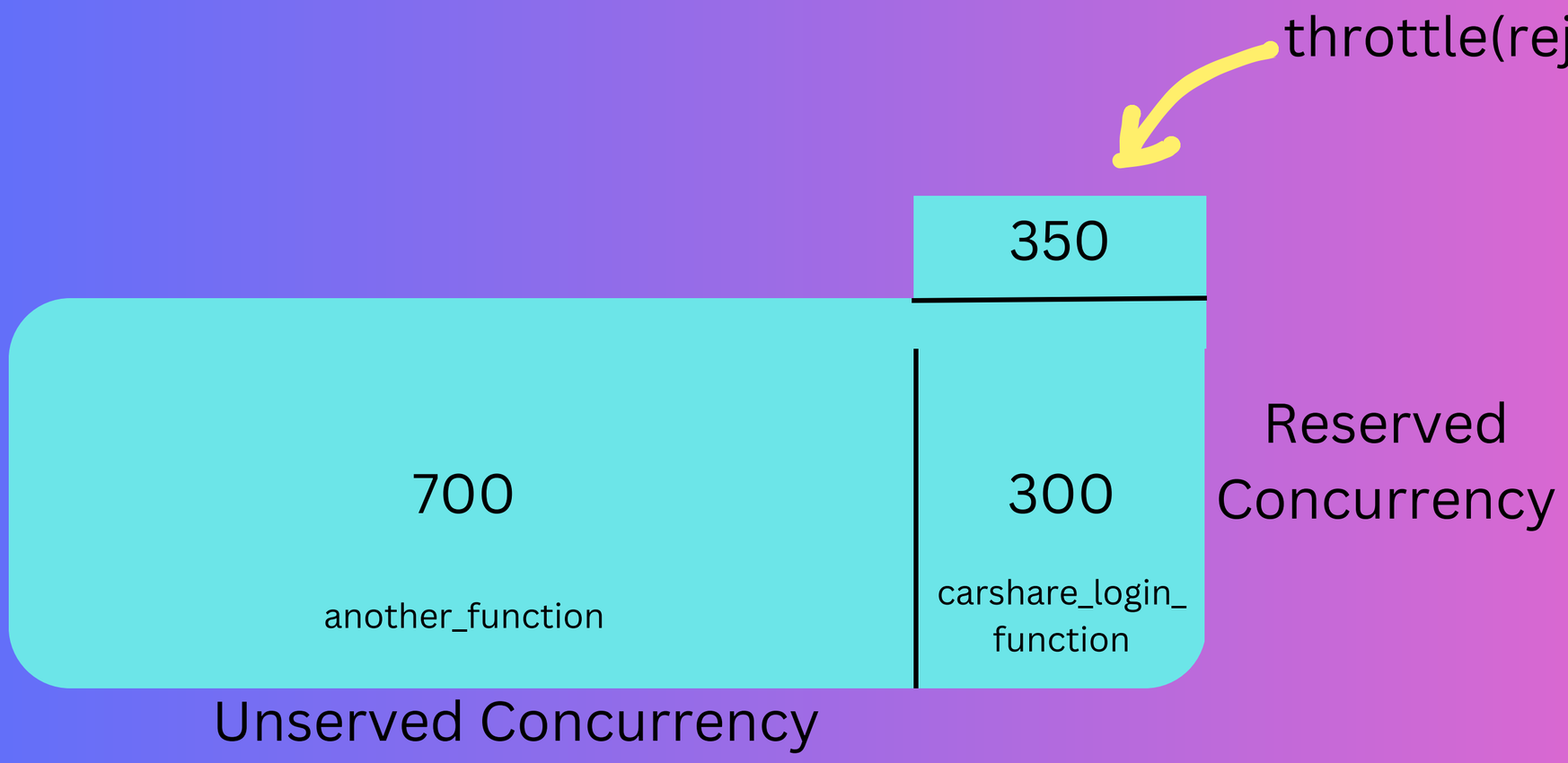
Default, concurrency is 1000.
If you want more than 1000, request support.
In some Region 3000 but temporary.

Minium unreserved concurrency is 100..



Unserved Concurrency

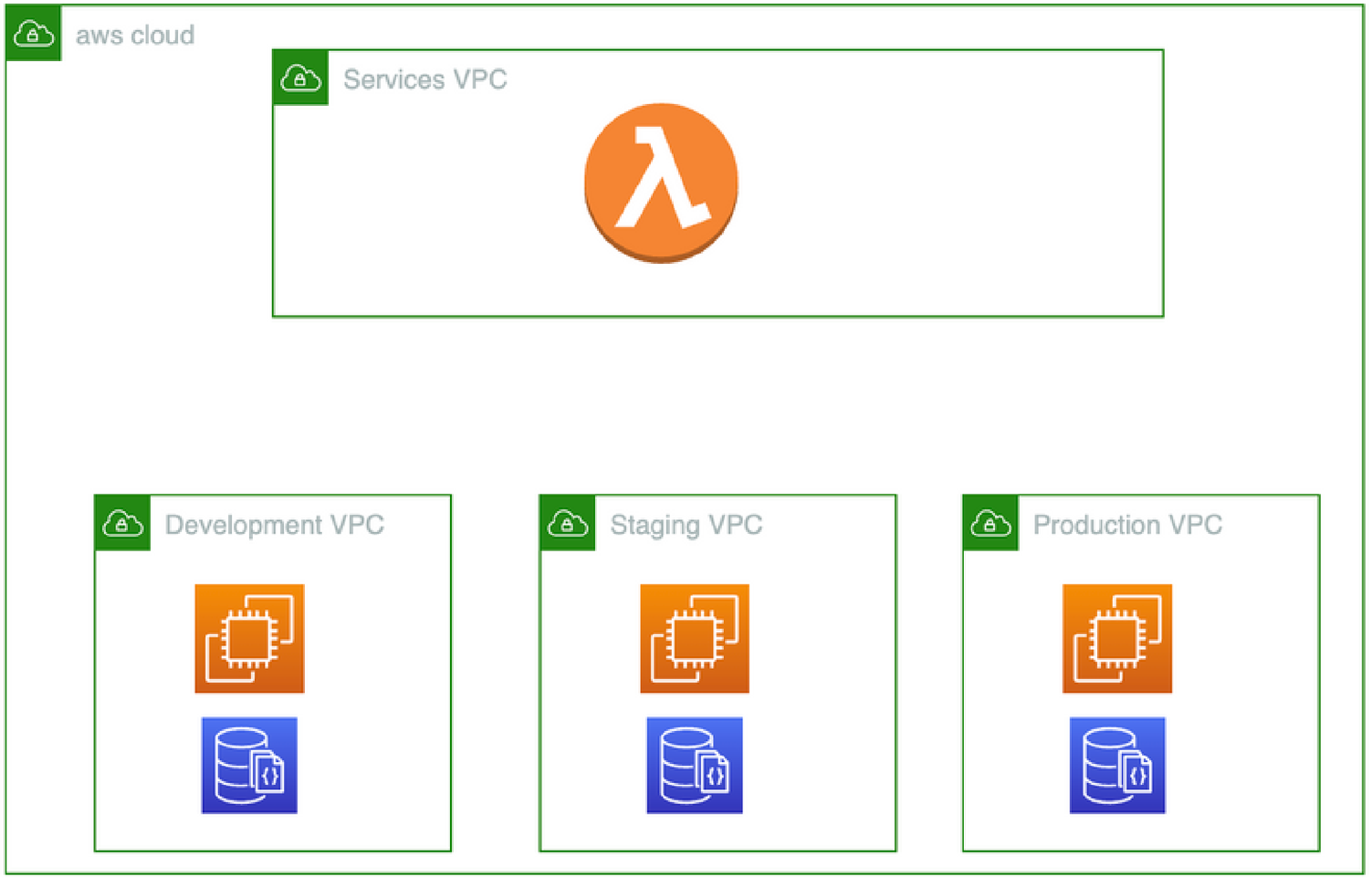
Reserved
Concurrency



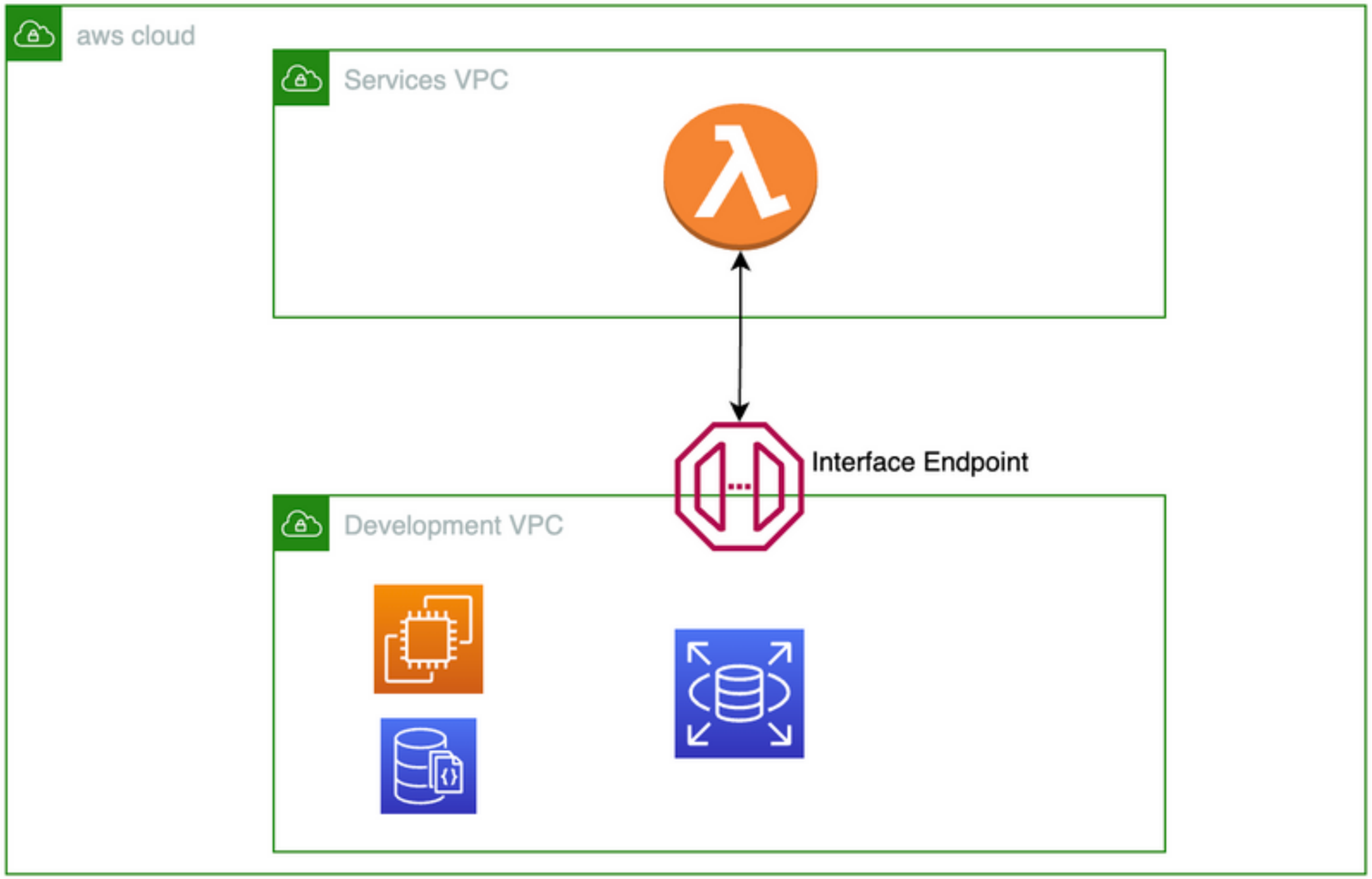
throttle refers to a mechanism that limits the number of concurrent function executions to prevent overwhelming a function or a downstream resource. When a function is throttled, it means that AWS Lambda has reached the maximum number of concurrent executions for the function

Lambda Networking

Lambda Networking



Lambda Networking



MONITORING

Monitoring, Logging and Tracing of Lambda Service

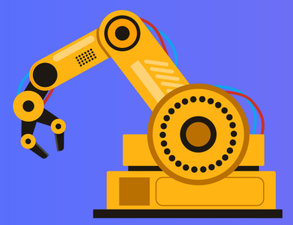
Amazon CloudWatch

- Number of requests
- Duration per request

AWS X-Ray

- virtual maping
- identify performance bottlenecks and erros
- trace lambda function path

Lambda Common Use Cases



Data triggers

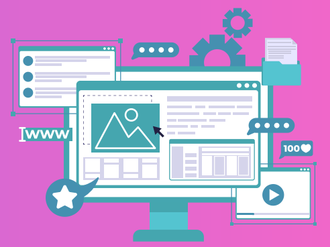
Triggers function on data changes in S3, SNS, SQS

Big Data

Real-time processing of streaming data updates using Kinesis

Control Systems

Customize responses and workflows to state changes within AWS services



Serverless Backend

Execute Server-side backend logic

Other use cases

Scheduled Events(cron)

- start or stop an instance at specific time
- Log cleanup
- Batch data jobs
- Alarm Clock
- Infrastructure Automation
- Scheduled Backup

Backup and Disaster Recovery

- Cross region replication
- Off-site backup

DEMO

BONUS KNOWLEDGE SHARING!

Trends and the Future of IT

1. Internet of Things will explode as connectivity becomes more extensive! Thanks 5G!
2. Artificial Intelligence and Machine Learning technology will also flourish
3. Intelligent Automation will help simplify operations
4. Security
5. DevOps will be necessary in getting everything to work together efficiently
6. Edge Computing

Do you have any questions?

Send it to me! I hope you learned something new.