Go Serverless

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Learn how to develop API architectures without a server using AWS and Serverless Framework.

InspiringApps

Located on Pearl Street in
Downtown Boulder

Over 10 years old

Well over 100 apps for Android,
iOS, Echo and the web

Go Serverless

Intro

Serverless

Does it really mean you don’t need servers anymore?

NORDICAPIS.COM

Go Serverless

Not exactly serverless

- A cloud provider manages allocation of resources and servers

SHUTTERSTOCK / AMAZON

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- You just pay for the amount of resources consumed by your application
- Called FaaS or Functions as a Service
- Not to be confused with PaaS or SaaS

SaaS vs. PaaS vs. FaaS

SaaS

Software as a Service

- A service that is typically always running
- Applications managed by a third party
- Examples: Gmail, Salesforce, Dropbox

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Platform as a Service

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- Provides a platform for hosting
- Scaling unit is a server
- Examples: AWS Elastic Beanstalk, Heroku, Windows Azure

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FaaS

Functions as a Service

- Does not run unless it is needed
- Abstracts the idea of a server away from the developer
- Scaling unit is a single execution
- Examples: AWS Lambda, IBM Bluemix OpenWhisk

Advantages of Serverless Architecture

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Event-driven
Fixed costs are transformed into operation only costs

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Auto-scaling
It is scalable and fault tolerant by design

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Vendor control and vendor lock-in

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Mini-monoliths are easy to build

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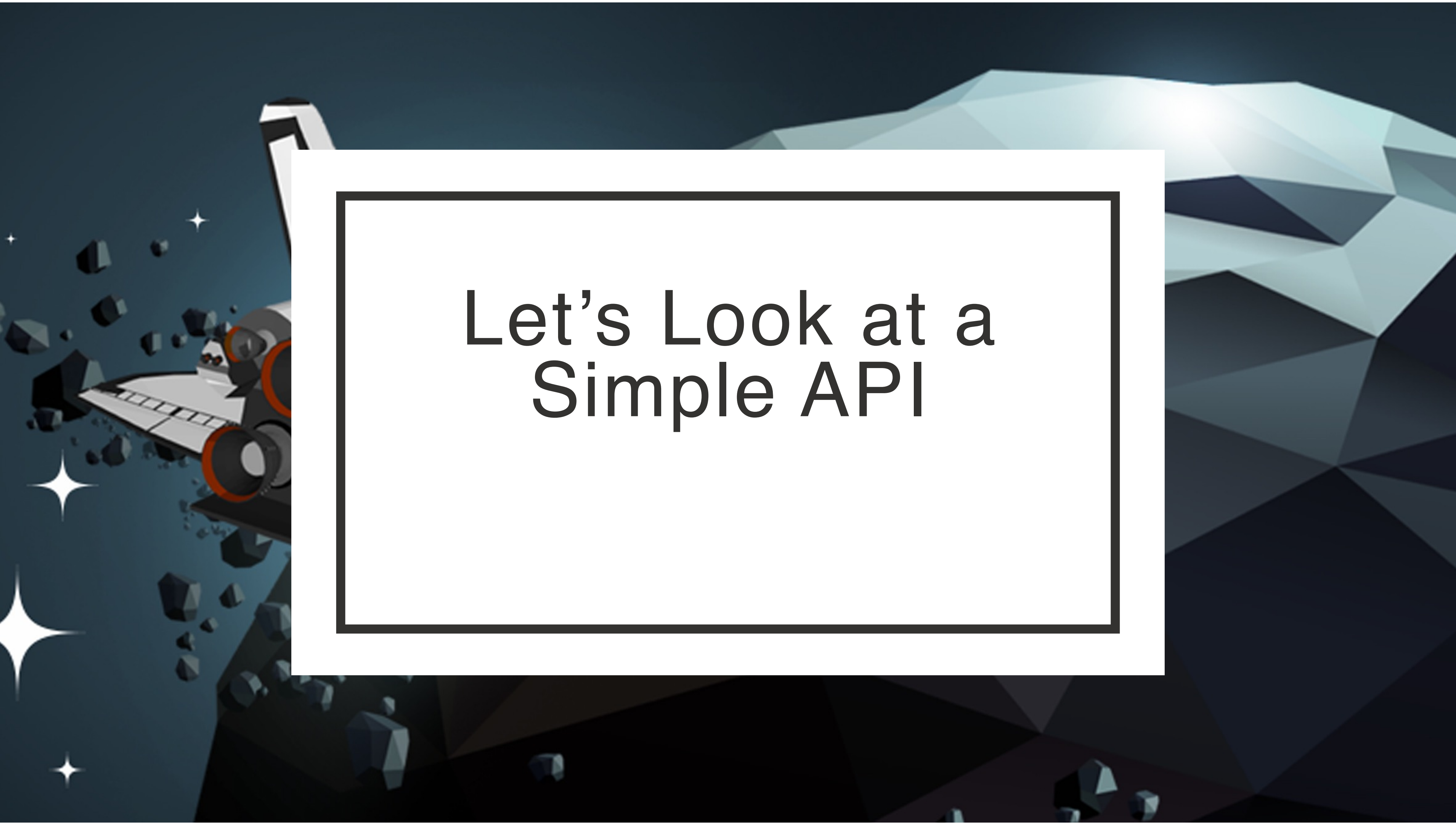
Architectural complexity
Mini-monoliths are easy to build

Implementation drawbacks
Deployment may mean deploying a single FaaS artifact for each function



Let’s Look at a Simple API

FaasCats API Overview

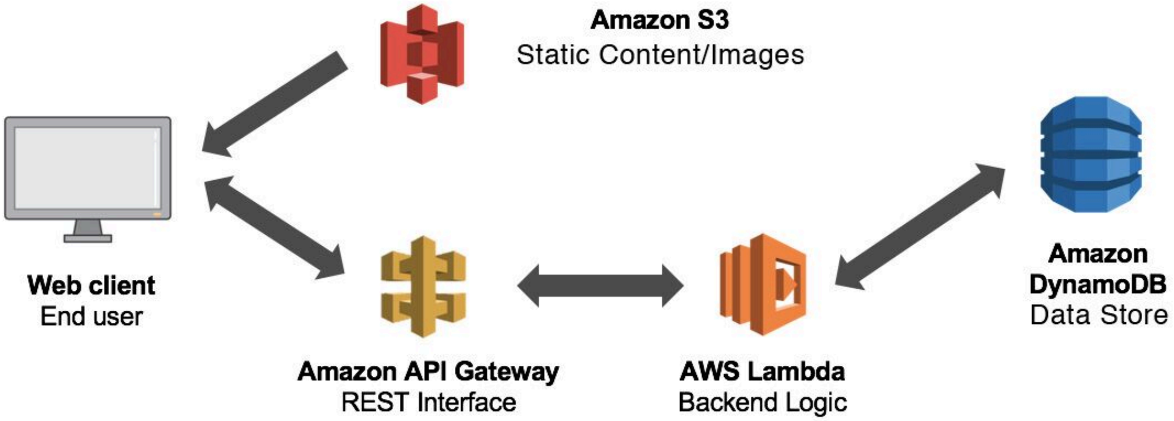
Objective:
Build a serverless API on AWS

Features:
Using the API, a user can Create, Read, Update and Delete famous cats

Using a web-based interface, a user can search for cats in the API

FaasCats API Overview

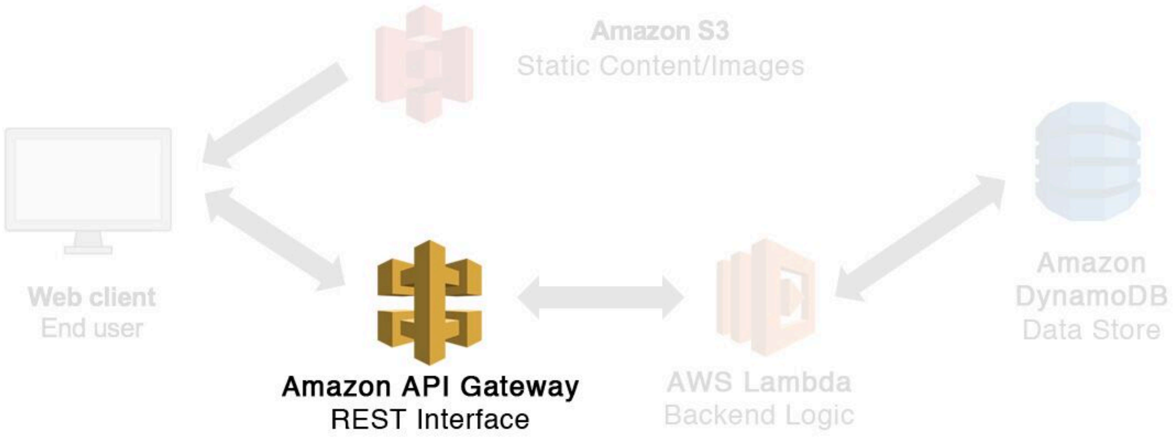
Build a serverless API



Serverless Framework can help us tie this all together

FaasCats API Overview

API Gateway



Directs traffic to different Lambda functions depending on endpoint

API Gateway

- Create, maintain and monitor APIs at scale

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- Acts as a “front door” for your applications

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Use Cases

Route to Lambda functions

Create RESTful endpoints to existing services

API Gateway

Cost:

Free Tier (first 12 months)

1 million API calls/mo.

Regularly

$3.50 per 1 millon API calls

API Gateway

Dashboard

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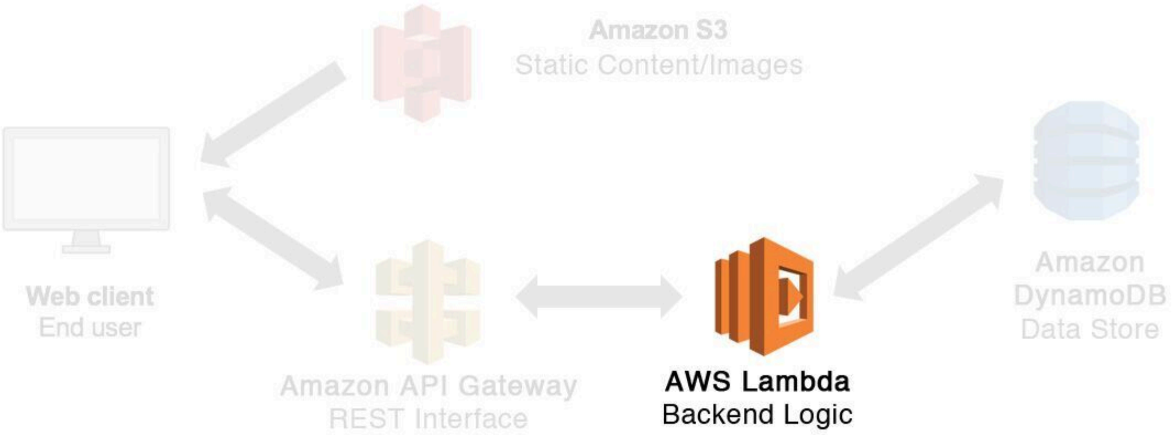
FaasCats API Overview

AWS Lambda



The “brains” of our application
Code handles data input and output

AWS Lambda

- Run code without thinking about servers

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AWS Lambda

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Use Cases

- Interact with a database
- Process uploaded S3 objects automatically

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AWS Lambda

Cost:

First 1 million requests / mo. free

Then

$0.20 per 1 million requests thereafter

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AWS Lambda

Dashboard

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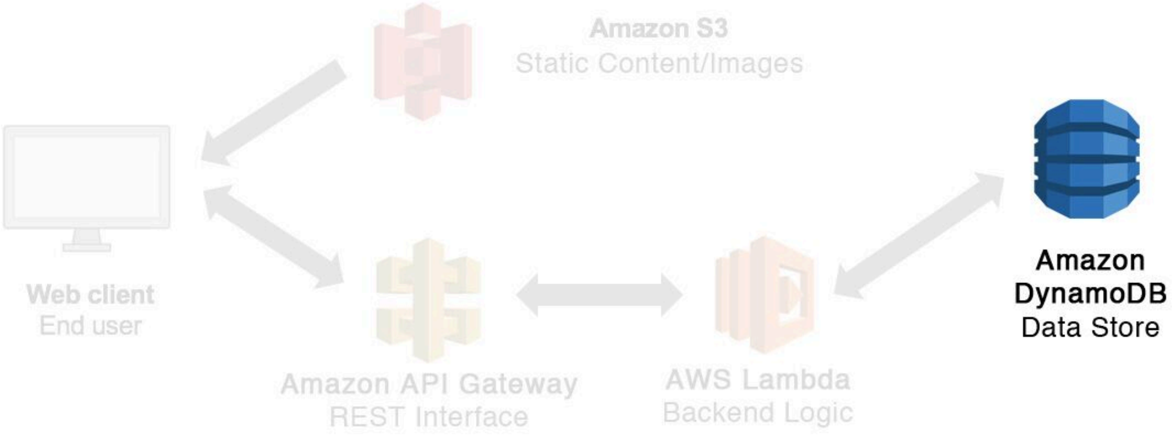
FaasCats API Overview

DynamoDB



Database storage
Stores cats and their images

DynamoDB

- Fully managed noSQL cloud database

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- Integrates with AWS Lambda for event-driven programming

Use Cases:

- Big data storage/retrieval
- Structured or unstructured data

DynamoDB

Cost:

25 GB Storage plus 200 million requests / mo.

free

Then

Varies based on usage and provisioning

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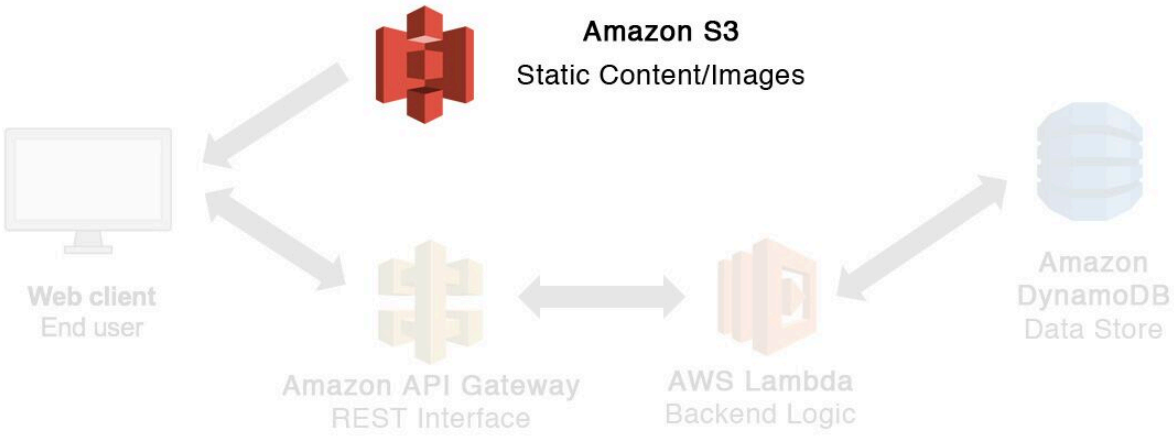
DynamoDB

Dashboard

Go Serverless with AWS

FaasCats API Overview

Amazon S3



Physical file storage
Also used to host a simple webpage used to interact with the app

Amazon S3

- Highly available object storage

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Amazon S3

- Highly available object storage

Use Cases

- Backup and recovery
- Data archiving
- Static website hosting

Amazon S3

Cost:

5 GB Storage free

Then

Varies based on usage starting at $0.023 / GB

for the first 50 TB storage

Amazon S3

Dashboard

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Let’s write some code!

Next Steps

Next Steps

- Protected Endpoints

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- Throttling

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Next Steps

- Protected Endpoints
- Throttling
- Scaling

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- Protected Endpoints
- Throttling
- Scaling
- Validation

Q&A

Additional Resources

Get the code
https://github.com/InspiringApps/HackCU18-AWS

Serverless Framework documentation
https://serverless.com/framework/docs/providers/aws/

AWS Getting Started
https://aws.amazon.com/getting-started/