



AWS On Tap



Serverless Application Model (SAM)

Jordan Bach

jbach@wciconsulting.com

November 8, 2017

Serverless

Serverless

- Is a lie!

Serverless

- Servers under the hood, but you don't have to think about them
- Functions as a Service (FaaS)
- No more paying for idle capacity
- Scale instantly to handle bursts of traffic
- Well suited for event-driven architectures
- Configurable via APIs

Serverless: more than compute

- Backend as a Service (BaaS)
- DynamoDB - NoSQL database as a service
- API Gateway - publish, maintain, monitor, and secure APIs

AWS Lambda

- Functions as a Service (FaaS) offering from AWS

AWS Lambda

- Supported languages
 - Java and JVM-based languages (e.g. Clojure)
 - C#
 - Node.js
 - Python

AWS Lambda

- Cost based on 3 dimensions
 - Function execution time in 100ms increments
 - Memory size
 - Number of requests

AWS Lambda

- Heavily integrated with other AWS services
 - Identity and Access Management (IAM)
 - CloudWatch Events
 - API Gateway
 - Kinesis Streams
 - Simple Notification Service (SNS)
 - Virtual Private Cloud (VPC)

DynamoDB

- Fully-managed NoSQL database
- Schemaless
 - No need to define your schema in advance*
 - Key-Value data models
 - JSON document storage
- Priced based on read capacity, write capacity, and indexed storage
- Autoscaling based on desired utilization of read/write capacity

**Except for primary key and local secondary indexes*

API Gateway

- Tailored to REST APIs - Swagger
- Multi-stage deployments
- Request throttling, usage plans, API keys, and quota limits
- Mapping - transform request and response data
- Caching
- Cost based on number of API calls, outbound data transfer, and GB/hour for caching (if caching enabled)

Serverless Application Model

- CloudFormation extensions to simplify defining serverless applications
- Introduces three new resource types
 - `AWS::Serverless::Function`
 - `AWS::Serverless::Api`
 - `AWS::Serverless::SimpleTable`
- Events - specify what triggers your functions
 - S3, SNS, Kinesis, DynamoDB, Api, Schedule, CloudWatch Event, IoTRule, AlexaSkill

<https://github.com/awslabs/serverless-application-model/blob/master/versions/2016-10-31.md>

SAM Example

- **River Gauges Slack App**
 - Save a list of favorite river gauges
 - Show current levels of favorite gauges
 - Check the level of a specific gauge
 - Uses USGS as a data source

<https://waterdata.usgs.gov/nwis>

SAM Example

- **River Guages Slash Command**
 - /gauges help - show help message
 - /gauges list - show a list of your favorite gauges
 - /gauges add GAUGE DESCRIPTION - add a favorite gauge
 - /gauges check GAUGE - show levels of favorite gauge

<https://api.slack.com/slash-commands>

Demo & Code

<https://github.com/awsontap/river-gauges-slack-app>

Discussion Time