

AWS Essentials

Databases and Serverless

SoftUni Team

Technical Trainers



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Company | Opportunities

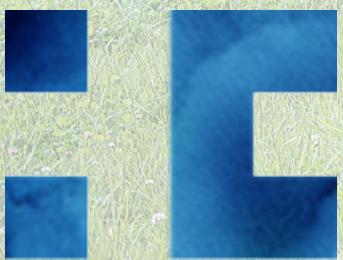
2020

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HELECLOUD

Who we are

HeleCloud Locations



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Bulgaria



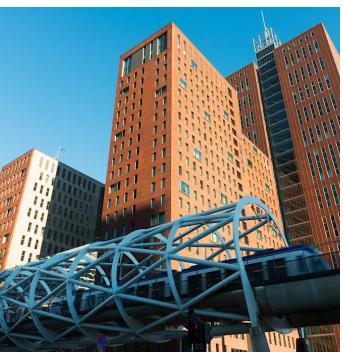
67 employees
7 departments

London
UK

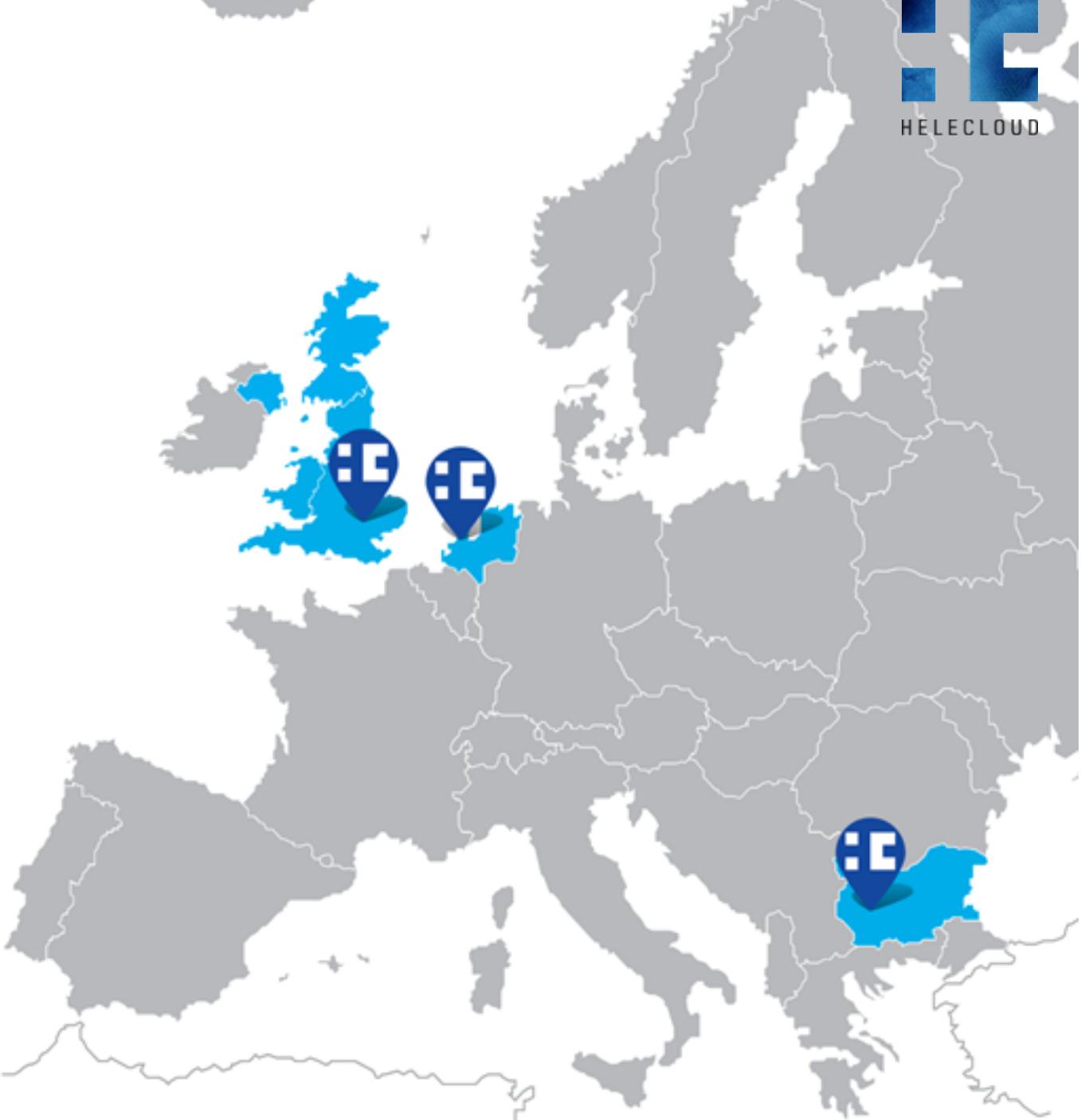


17 employees
2 departments

The Hague
Netherlands



14 employees
2 departments



Why HeleCloud



Competitive compensation (base salary + corporate benefits+ bonuses)

Great Work Life balance

Pan-European and global customers and projects

A culture of Learning, and Personal Development

Your input counts - shape the future of the company and the business

Be at the forefront of the Cloud services revolution from day one

Opportunities to grow career-wise in all departments and countries

Provide technical and business thought leadership: present at internal and external events, international conventions, whitepapers

CHECK OPENINGS



 hr@helecloud.com

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Have a Question?



sli.do

The sli.do logo is displayed in a large, bold, orange sans-serif font, centered within a circular network graphic.

AWS-essentials

The text "# AWS-essentials" is rendered in a large, bold, dark blue sans-serif font, positioned below the central logo.



What are RDS and DynamoDB

AWS Primary Database Options

- In the world of databases, there are two main categories:
 - Relation database known as "SQL" - RDS
 - Non-relation database known as "NoSQL" - DynamoDB



Amazon RDS



Amazon DynamoDB

What is RDS ?

- Web service that makes it easier to setup, operate, and scale a relation database in the cloud. It provides cost-efficient, re-sizable capacity while automating time consuming administration tasks.
- SQL Options include :
 - Amazon Aurora
 - MySQL
 - MariaDB
 - PostgreSQL
 - Oracle, Microsoft SQL



- Walk through creating a basic database.

What is DynamoDB ?



- Fully managed NoSQL database service for all applications that need **consistent, single-digit-millisecond latency at any scale.**
- DynamoDB can replace:
 - MongoDB
 - Cassandra DB
 - Oracle NoSQL

DynamoDB use cases



- Flexible data model
- Reliable performance
- Automatic scaling

- Mobile
- Web
- Gaming
- IoT
- many more...

Demo

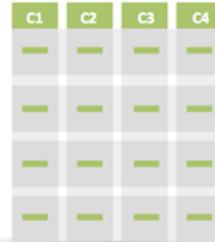
- Create a dynamo db



To SQL or to NoSQL



Amazon RDS



Relational data model

Highly-structured table organization with rigidly-defined data formats and record structure.

Stores related data in tables (columns and rows)

Typically used for structured data



Amazon DynamoDB



Document data model

Collection of complex documents with arbitrary, nested data formats and varying "record" format.

Stores data in JSON-like, name-value documents

Typically used for non – structured data such as cataloging documents

■ Sample data: movie data

```
{  
    "year" : 2013,  
    "title" : "Turn It Down, Or Else!",  
    "info" : {  
        "directors" : [  
            "Alice Smith",  
            "Bob Jones"  
        ],  
        "release_date" : "2013-01-18T00:00:00Z",  
        "rating" : 6.2,  
        "genres" : [  
            "Comedy",  
            "Drama"  
        ],  
        "image_url" : "http://ia.med/X400_.jpg",  
        "plot" : "A rock band plays their music at high volumes, annoying the neighbors.",  
        "rank" : 11,  
        "running_time_secs" : 5215,  
        "actors" : [  
            "David Matthewman",  
            "Ann Thomas",  
            "Jonathan G. Neff"  
        ]  
    }  
}
```

What are the Differences/Benefits ?



Amazon RDS

- When you need SQL DB options
- Easy to set up, highly available, fault tolerant, and scalable
- Used when data is clearly defined
- Common use cases: online stores, banking systems

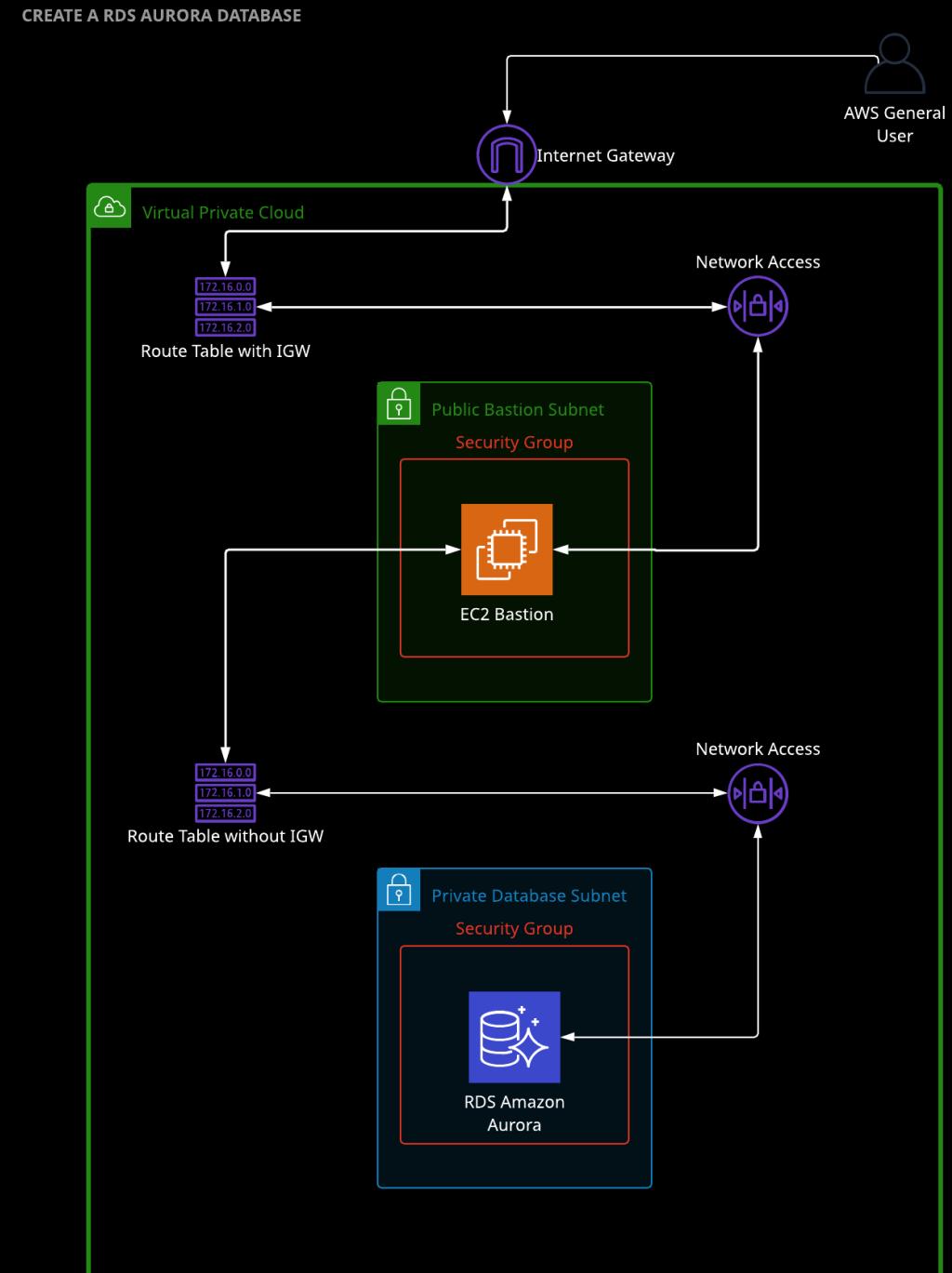


Amazon DynamoDB

- When you need NoSQL DB options
- Fully Managed, fast , highly scalable
- Used when data is fluid and can change
- Common use cases : web analytics, social networks

create an Aurora MySQL database and test connection

- verify that the security group, network ACL, and route table are all configured to allow communication between an instance in a public subnet and an RDS database in a private subnet
- Create the database
- Use an EC2 instance as a bastion to allow us to connect to our private database from an external source
- MySQL Workbench to connect to our private RDS Aurora database through the public EC2 bastion



Почивка

- Започваме отново в 20:25

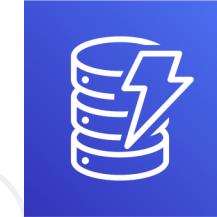


Databases summary



Amazon RDS

- Relational Database Service
- SQL database service



Amazon DynamoDB

- NoSQL service
- Replace / similar to
 - MongoDB
 - CassandraDB
 - Oracle NoSQL

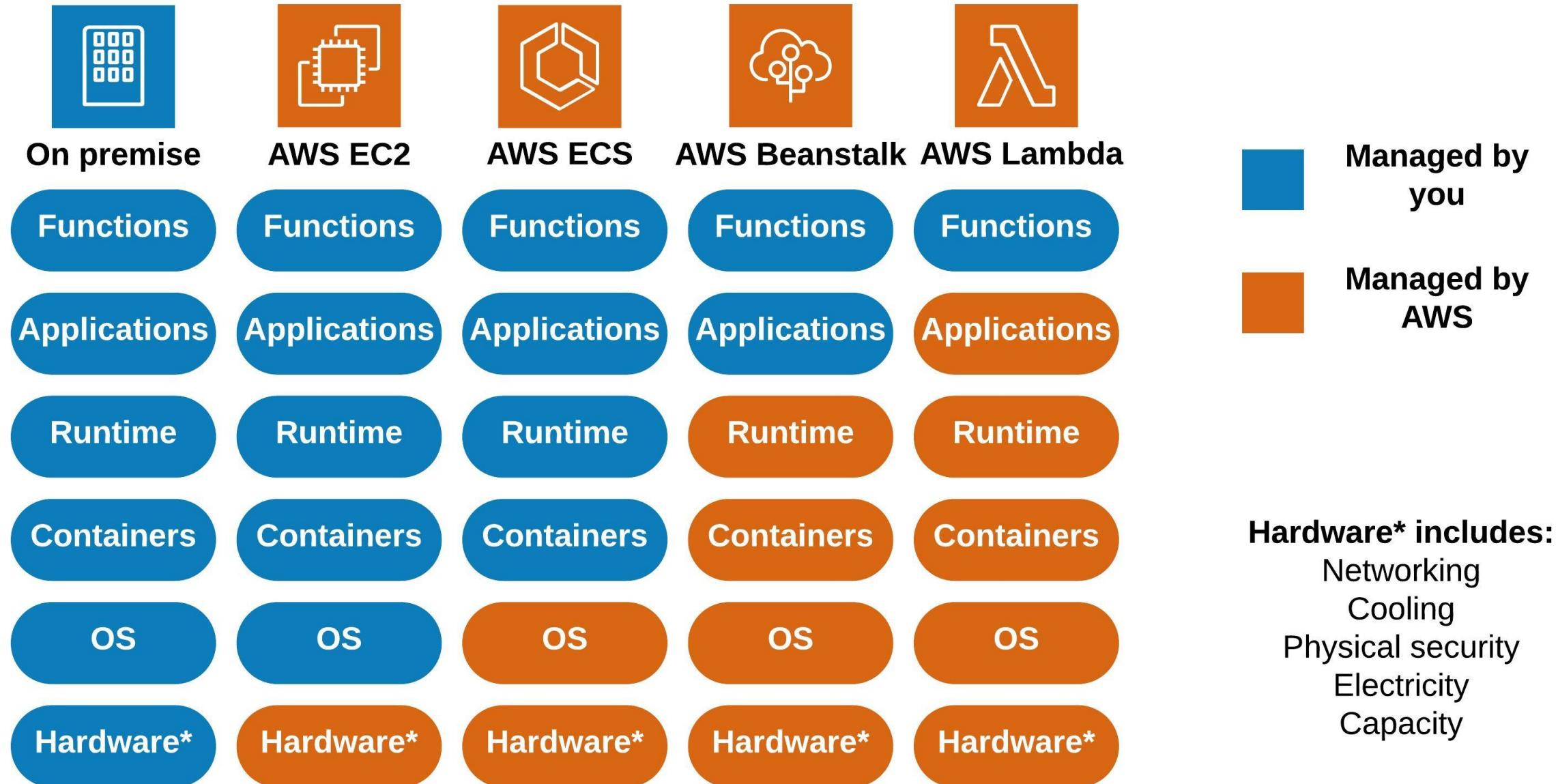


Serverless

The need for FaaS and Serverless



The need for FaaS and Serverless



AWS Serverless



- AWS Lambda & Step Functions
- DynamoDB
- AWS Cognito
- AWS API Gateway
- Amazon S3
- AWS SNS & SQS
- AWS Kinesis
- Aurora Serverless

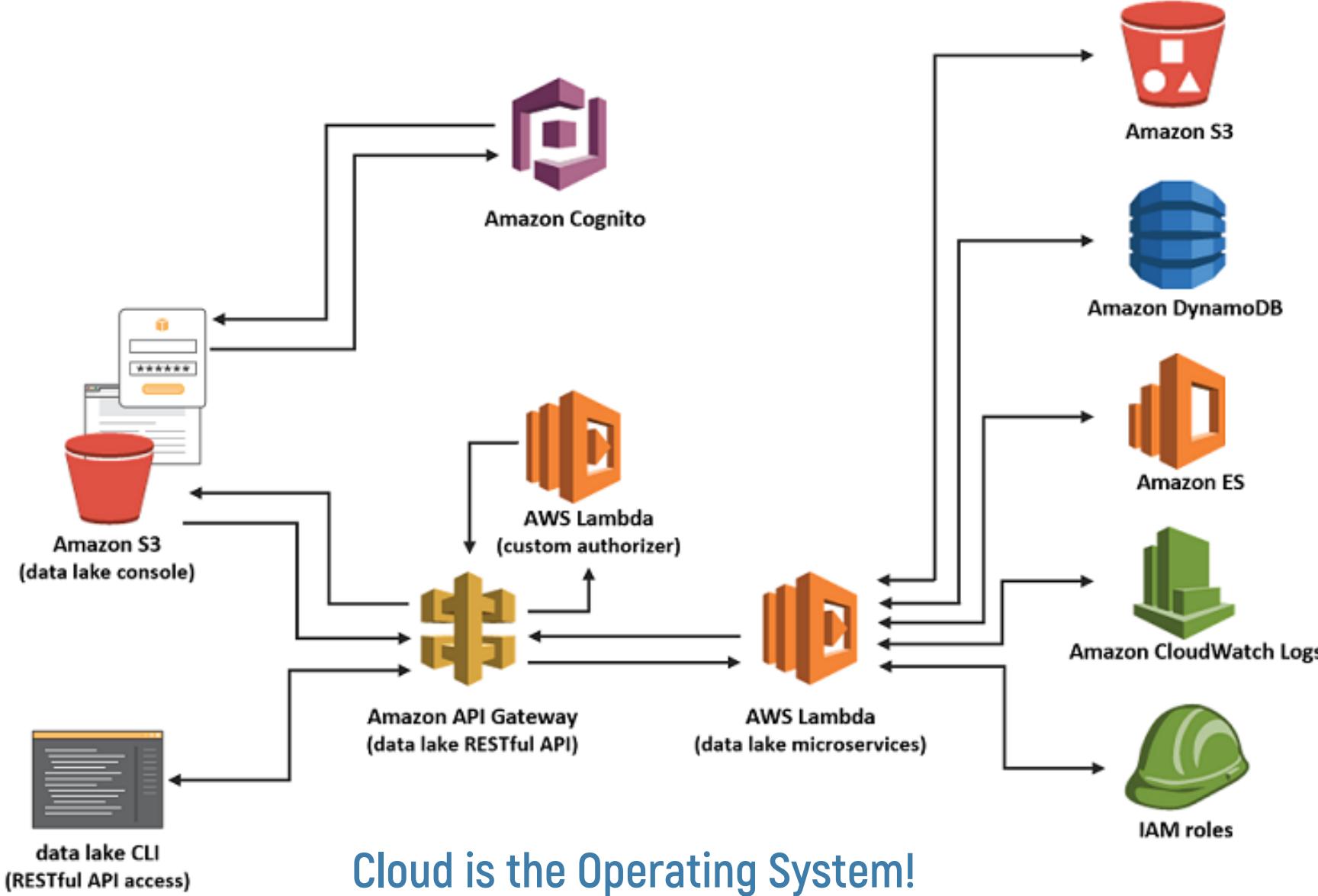
What is Lambda ?



AWS Lambda

Compute service that **runs your code** in response to **events** and **automatically** manages the underlying compute resources for you. You can use AWS Lambda to extend other AWS services with custom logic or create your own back-end services that operate at AWS scale, performance, and security. **AWS Lambda can automatically run code** in response to multiple events, such as HTTP requests via Amazon API Gateway, modifications to objects in Amazon S3 buckets, table updates in Amazon DynamoDB, and state transitions in AWS Step Functions.

Serverless Computing on AWS



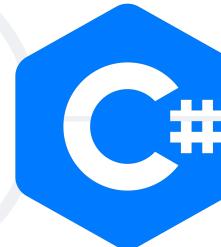
Cloud is the Operating System!



Introducing AWS Lambda

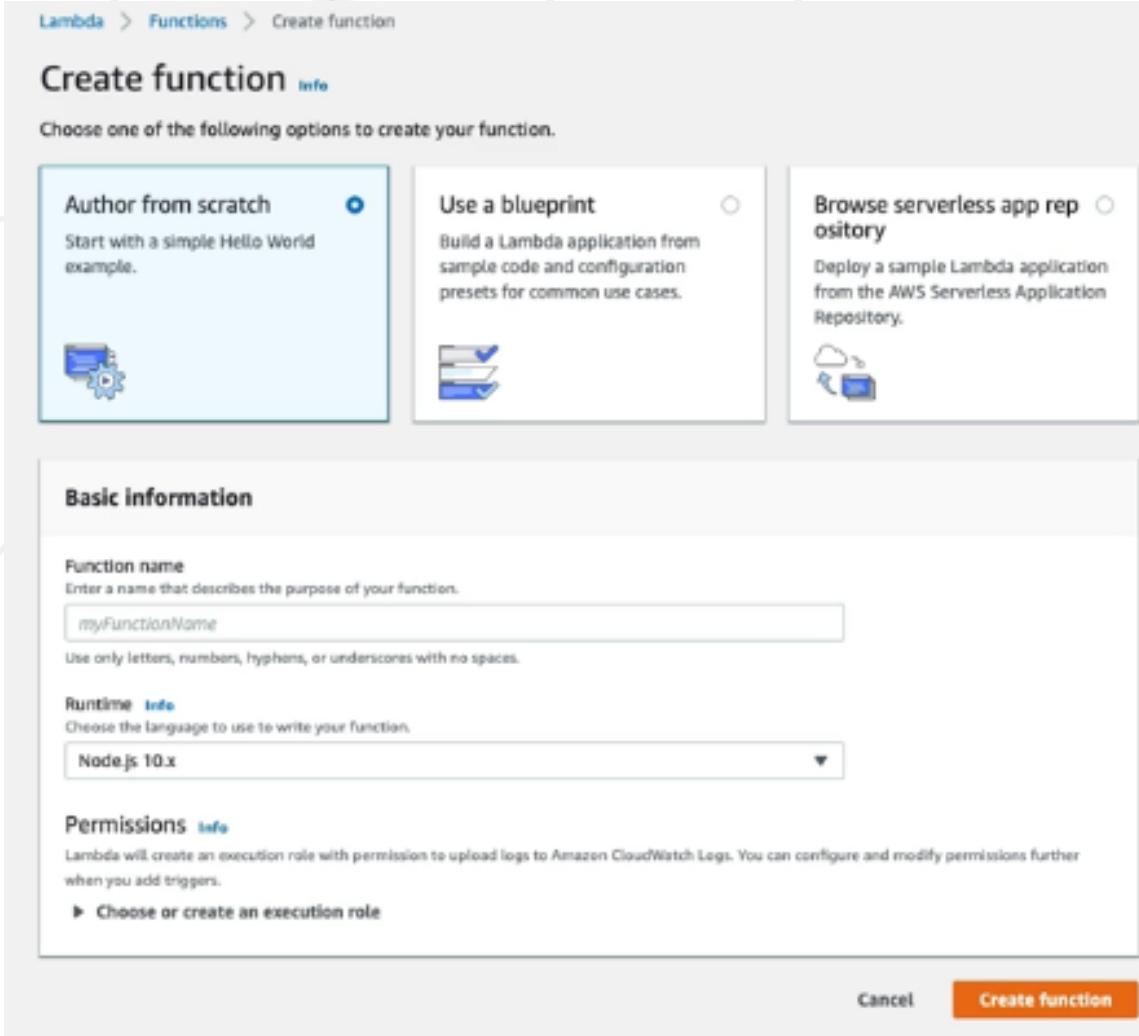


Integration
with
programming
languages

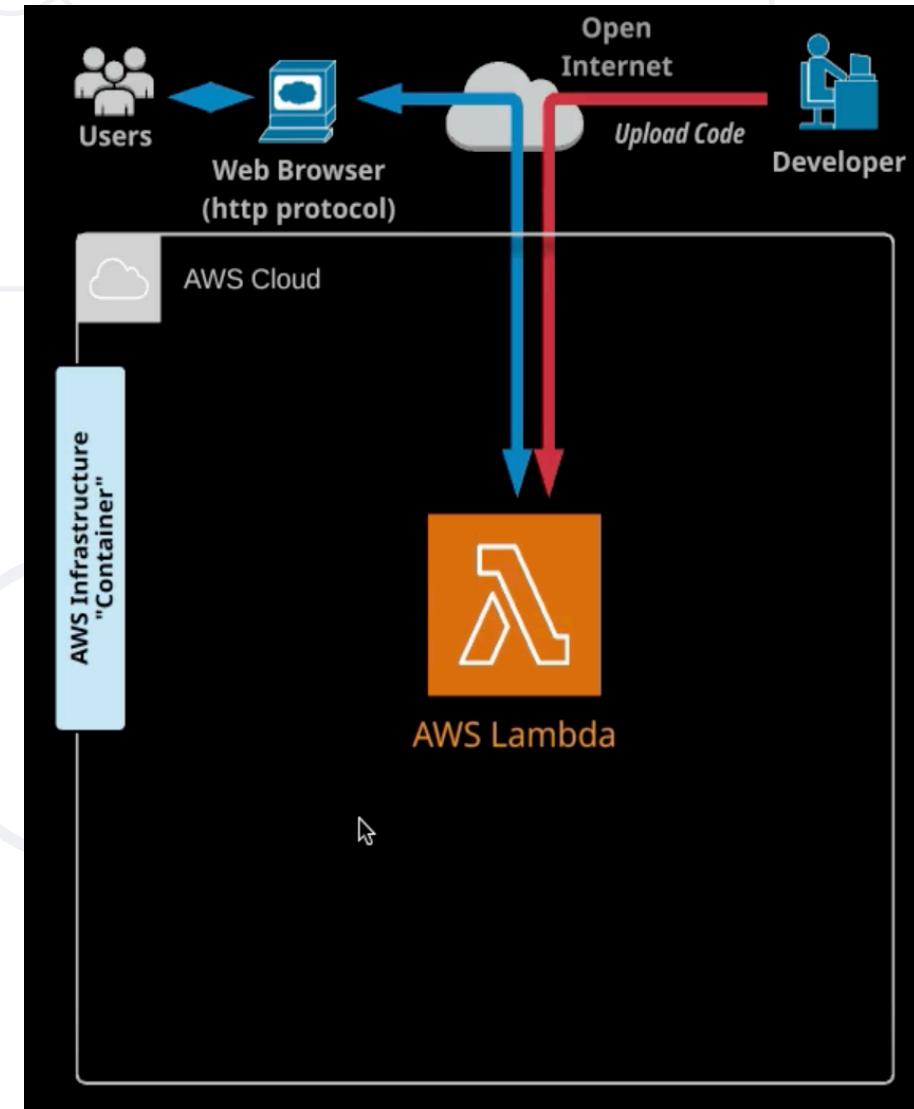
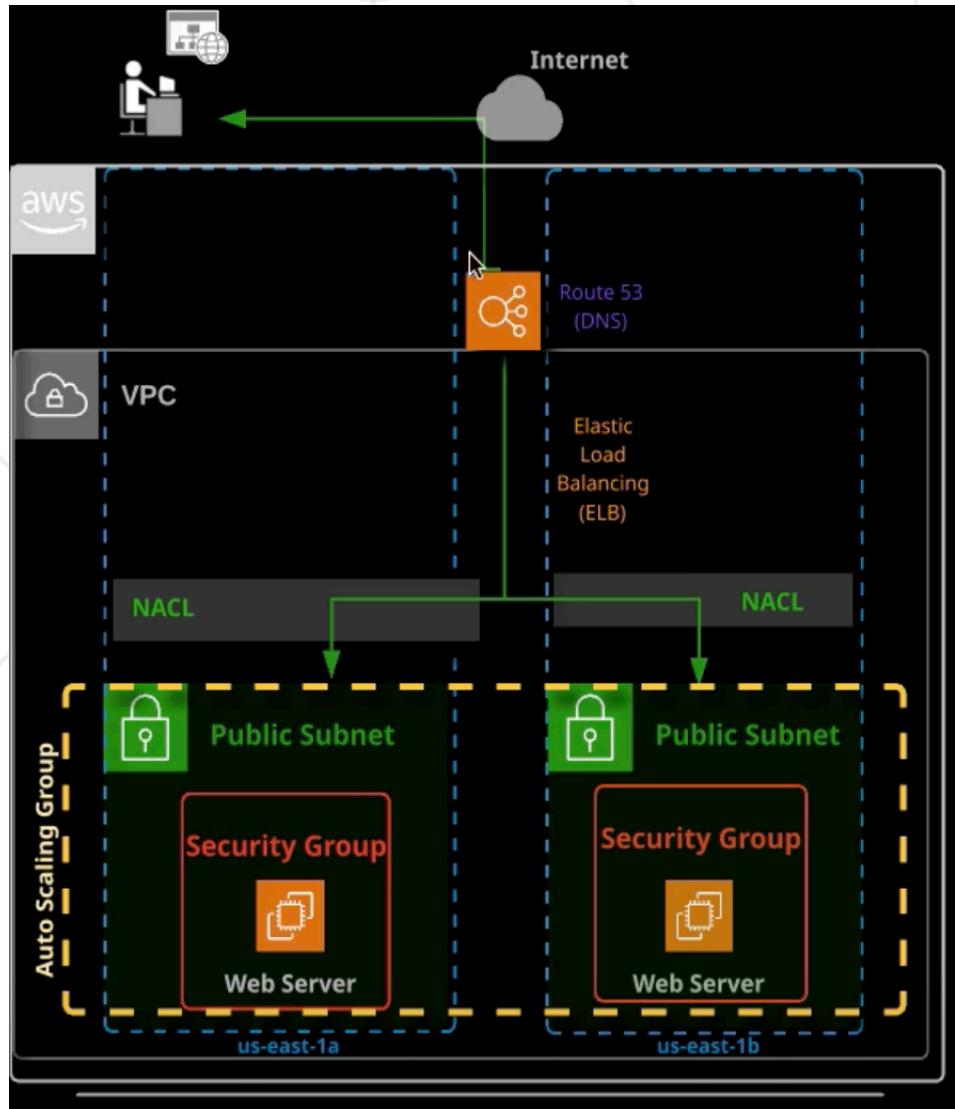


Demo

■ Walk through



EC2 / Lambda Comparison



Lambda Benefits and Use Cases



AWS Lambda

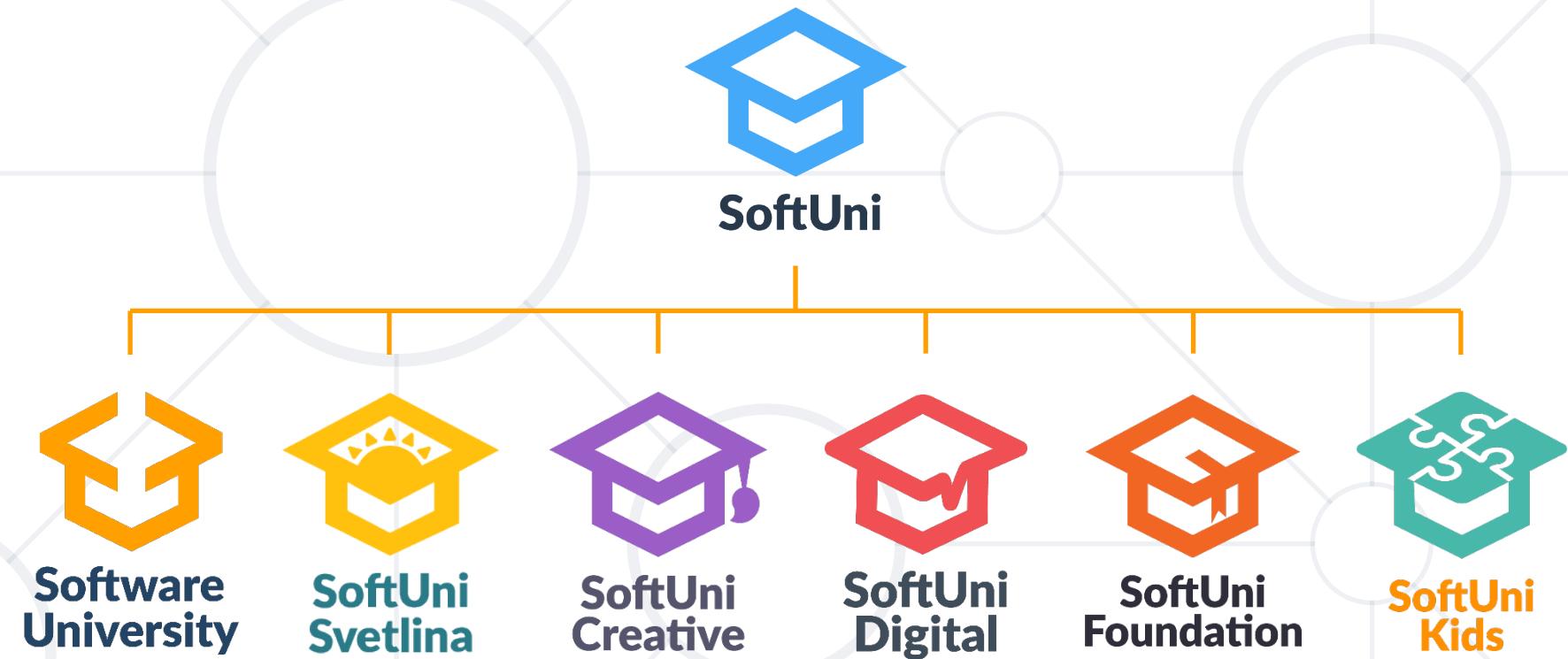


- **Additional Benefits:**
 - No servers to manage
 - Continuous scaling
 - Subsecond metering
 - Integrates with almost every AWS Service
- **Primary Use Cases:**
 - Data processing
 - Real time file processing
 - Real time stream processing
 - Build serverless back-ends for web, mobile, IoT, and third party API requests

Demo



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