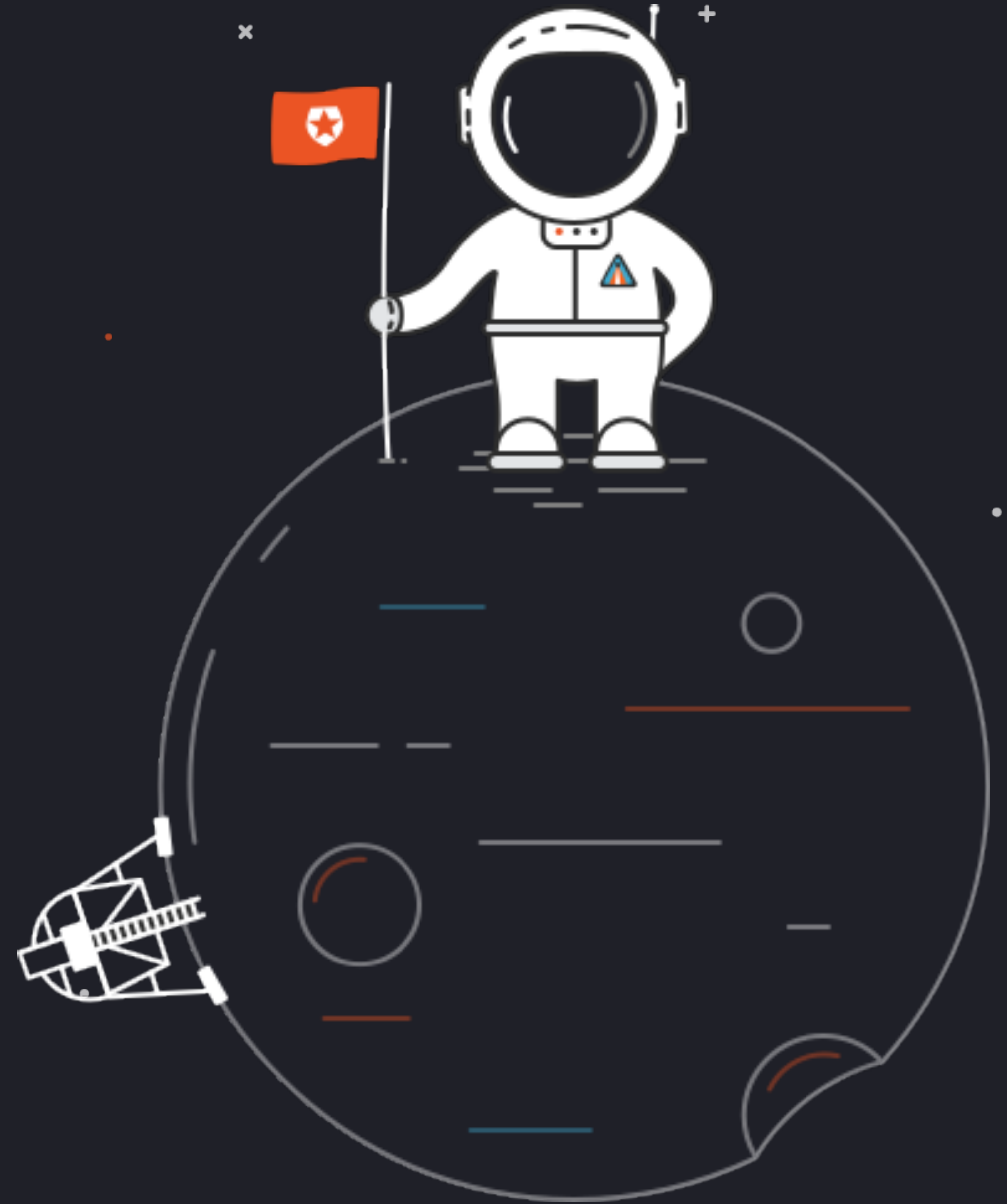


Serverless in Deep

ORACLE CODE





Mercedes Wyss
@itrjwyss



Community Leader
Devs+502 & JDuchess Chapter Guatemala

Ex-JUG Member
Guatemala Java Users Group (GuateJUG)

Chief Technology Officer (CTO) at Produactivity
Full Stack Developer

**Auth0 Ambassador &
Oracle Developer Champion**



- **What is Serverless?**
- What is not Serverless?
- Function as a Service - FaaS
- Serverless Architecture
- Benefits
- Drawbacks
- Serverless technologies and tools
- Design Patterns and Use Cases
- Demos
- FNProject

“**Serverless architectures** refer to applications that significantly **depend** on third-party services (known as Backend as a Services - **BaaS**) or on custom code that’s **run** in **ephemeral containers** (Function as a Service - **FaaS**)”

MartinFowler.com



Backend as a Service

- Applications that significantly or fully depend on 3rd party applications / services (“in the cloud”) to manage server-side logic and state.
- Cloud accessible databases (Parse, Firebase)
- Authentication Services (Oracle Identity Cloud Service, Auth0, Amazon Cognito)

Functions as a Service

- Run in stateless compute containers that are event-triggered
- Ephemeral
- Fully managed by a 3rd party
- AWS Lambda, Google Cloud Functions, Firebase Functions, Azure Functions, FNProject



Key Characteristics of a Serverless Application

- No server management
- Flexible scaling
- High availability
- Never pay for idle
(Integrated Development Environment)

Serverless

Developers can:

- move away from servers and infrastructure concerns.
- build loosely coupled, scalable, and efficient architectures quickly.
- focus primarily on code.





Servers are
fully-abstracted



Scaling is event-driven
not resource-driven



Pay only
for what you use

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What is not Serverless?

- Platform as a Service (PaaS)
- Containers
- #NoOps
- Stored Procedures as a Service

Pre-Cloud B.Y.O. Servers



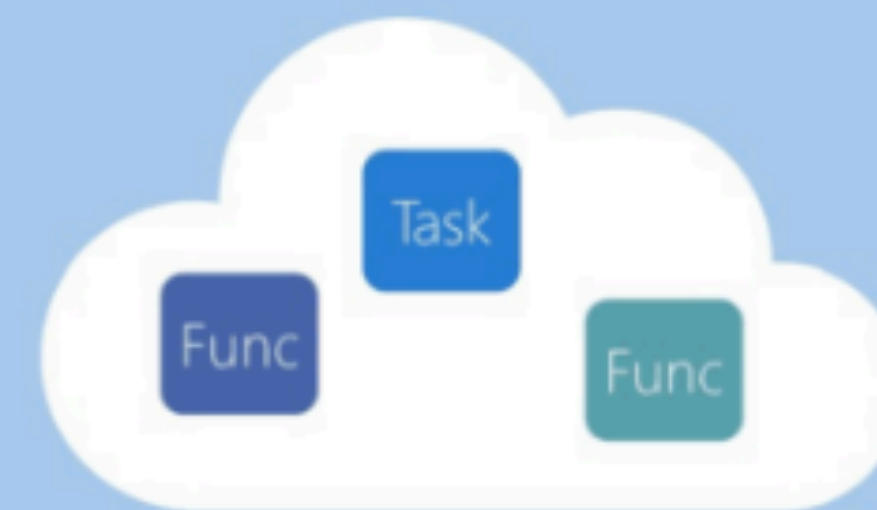
IaaS

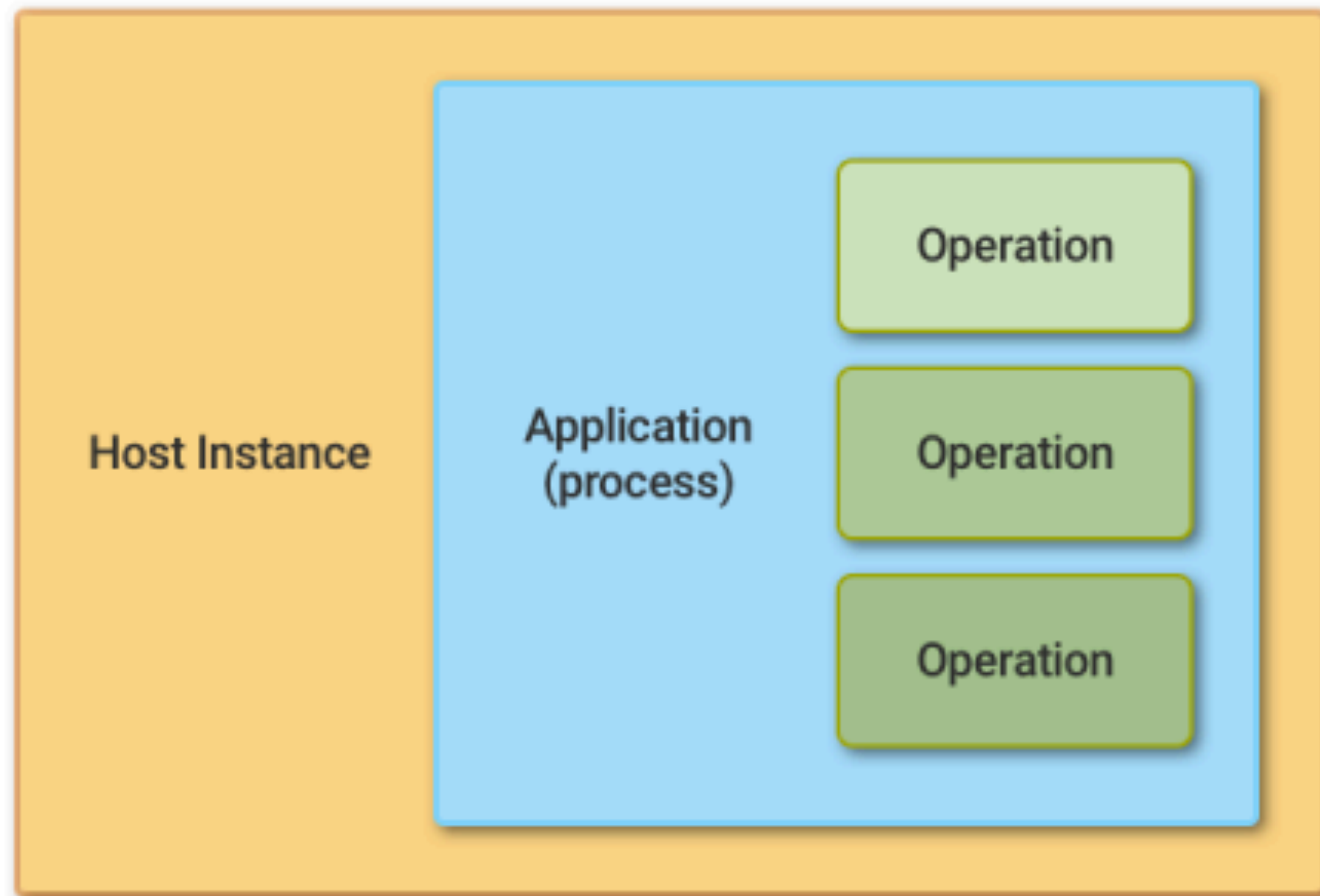


PaaS



"Serverless"





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Developer
Champion



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Function as a Service

- Serverless computing via Serverless architectures.
- Deploy an individual “function”, action, or piece of business logic.
- Event-driven processing part of the serverless architecture.



Principles of FaaS

- Complete abstraction of servers away from the developer.
- Billing based on consumption and executions, not server instance sizes.
- Services that are event-driven and instantaneously scalable.

FaaS in Terms of a Cloud Platform

- Run code without provisioning or managing servers.
- We can run code for virtually any type of application or backend service.
- Zero administration. Just upload the code, and we will run.
- And scale.
- Code with high availability, automatically trigger from other services.
- Can call it directly from any web or mobile app.



FaaS State

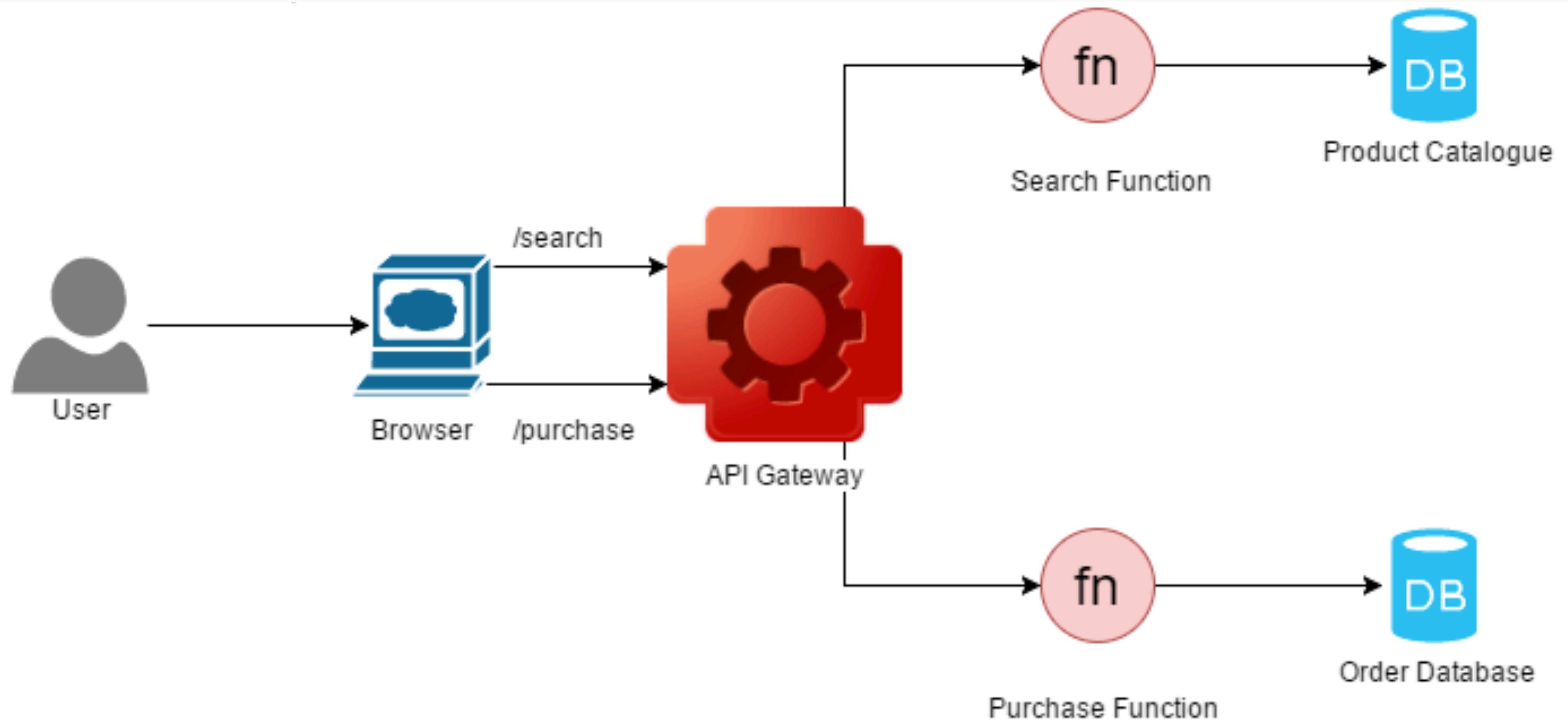
- Are Stateless.
- Provide pure functional transformations of their input.

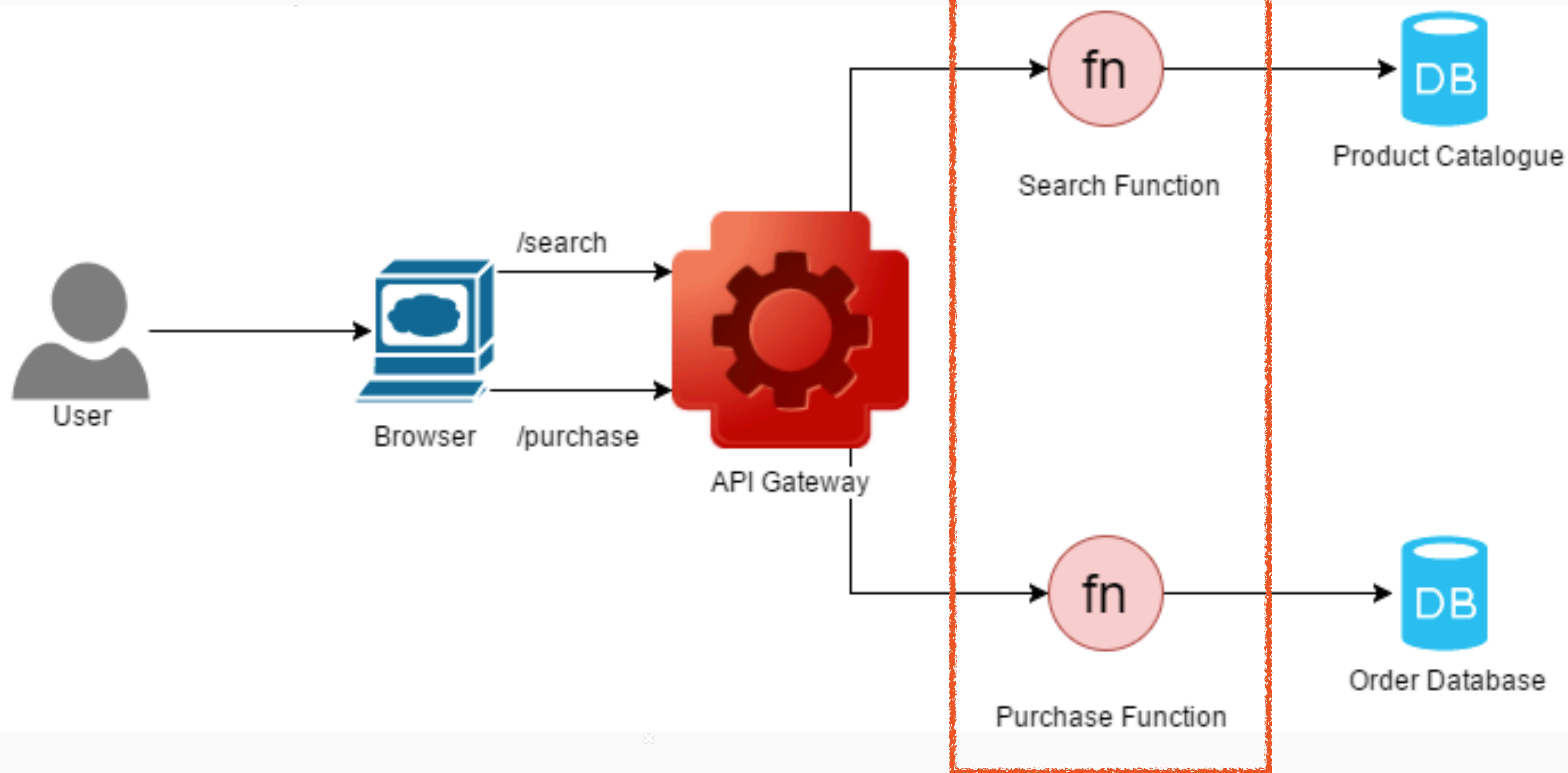
FaaS Execution Duration

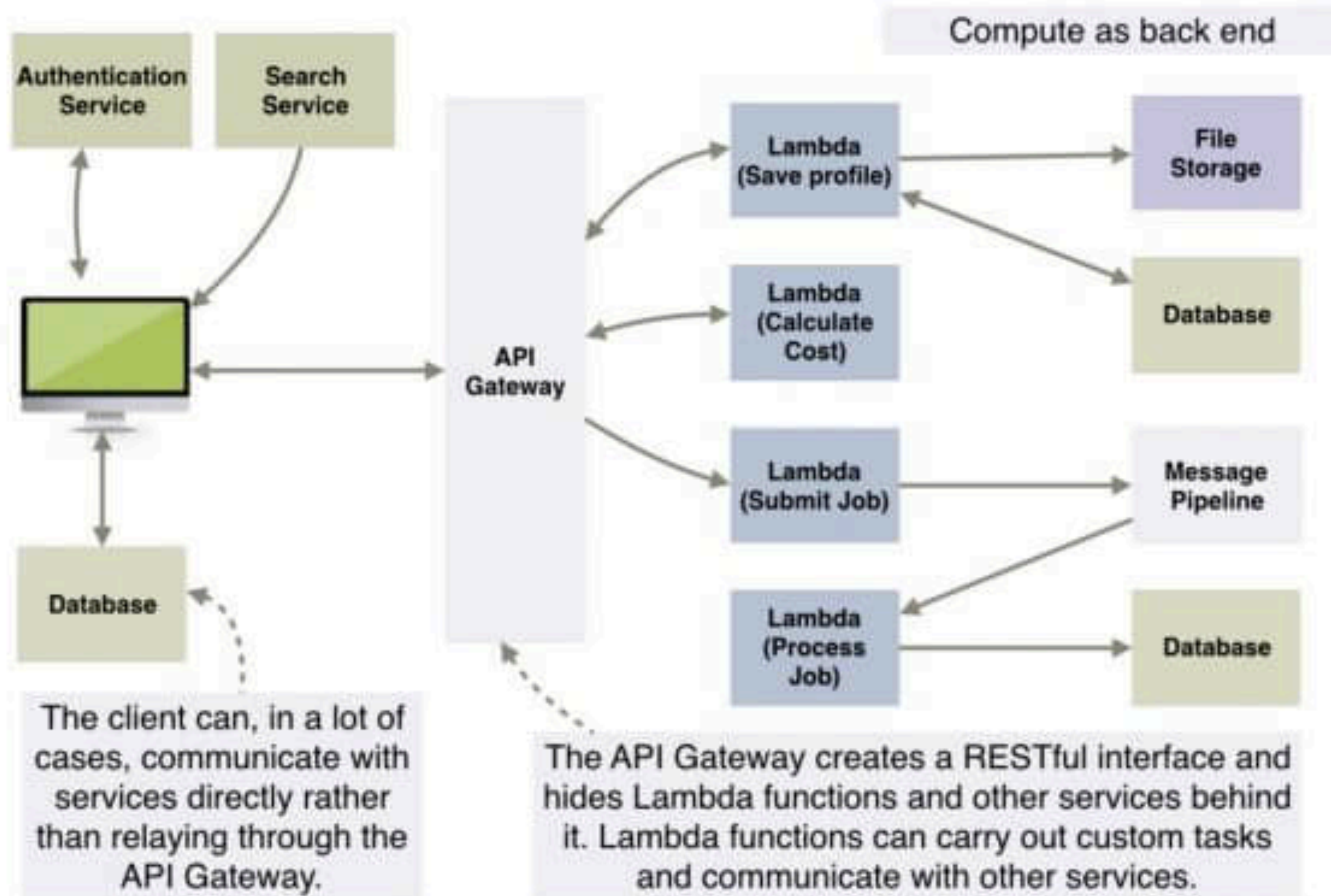
- FaaS functions are typically limited in how long each invocation is allowed to run.

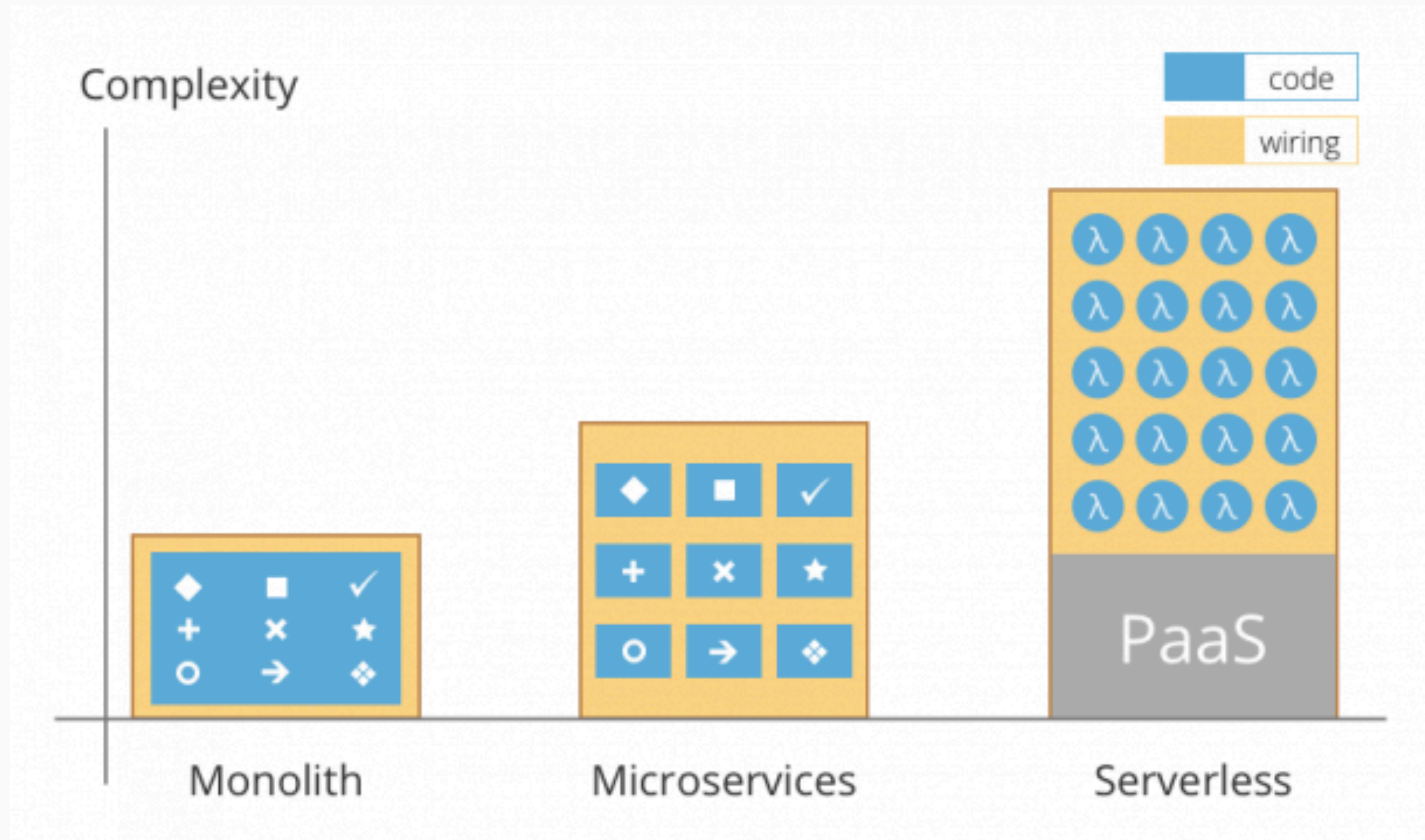


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- What is Serverless?
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- **Benefits**
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Benefits

- Time-to-market Improvement
- Reduced Operational Cost
- Infrastructure Cost Reduction
(FaaS scaling cost)
- BaaS - reduced development cost
- ✕ • Easier Operational Management



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Drawbacks

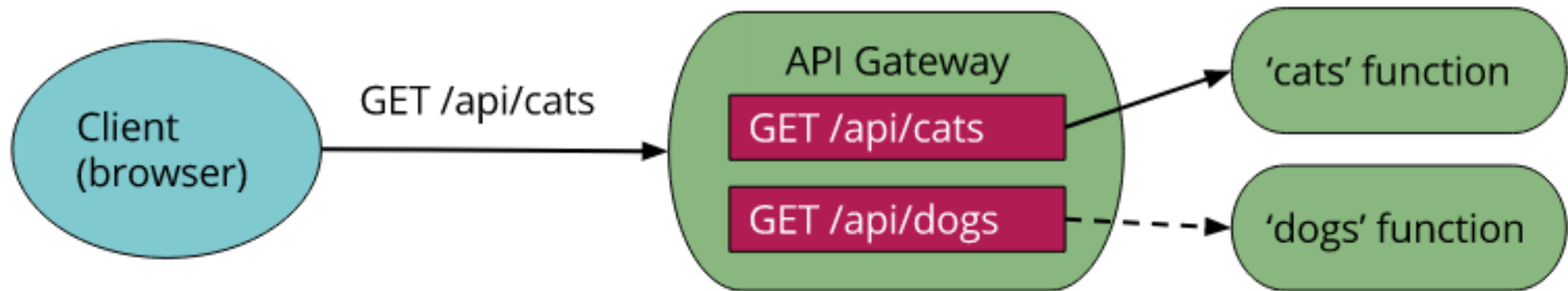
- Problems due to Third-party API system
- Lack of operational tools
- Architectural complexity
- Monitoring Challenges
- Implementation drawbacks



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API Gateway



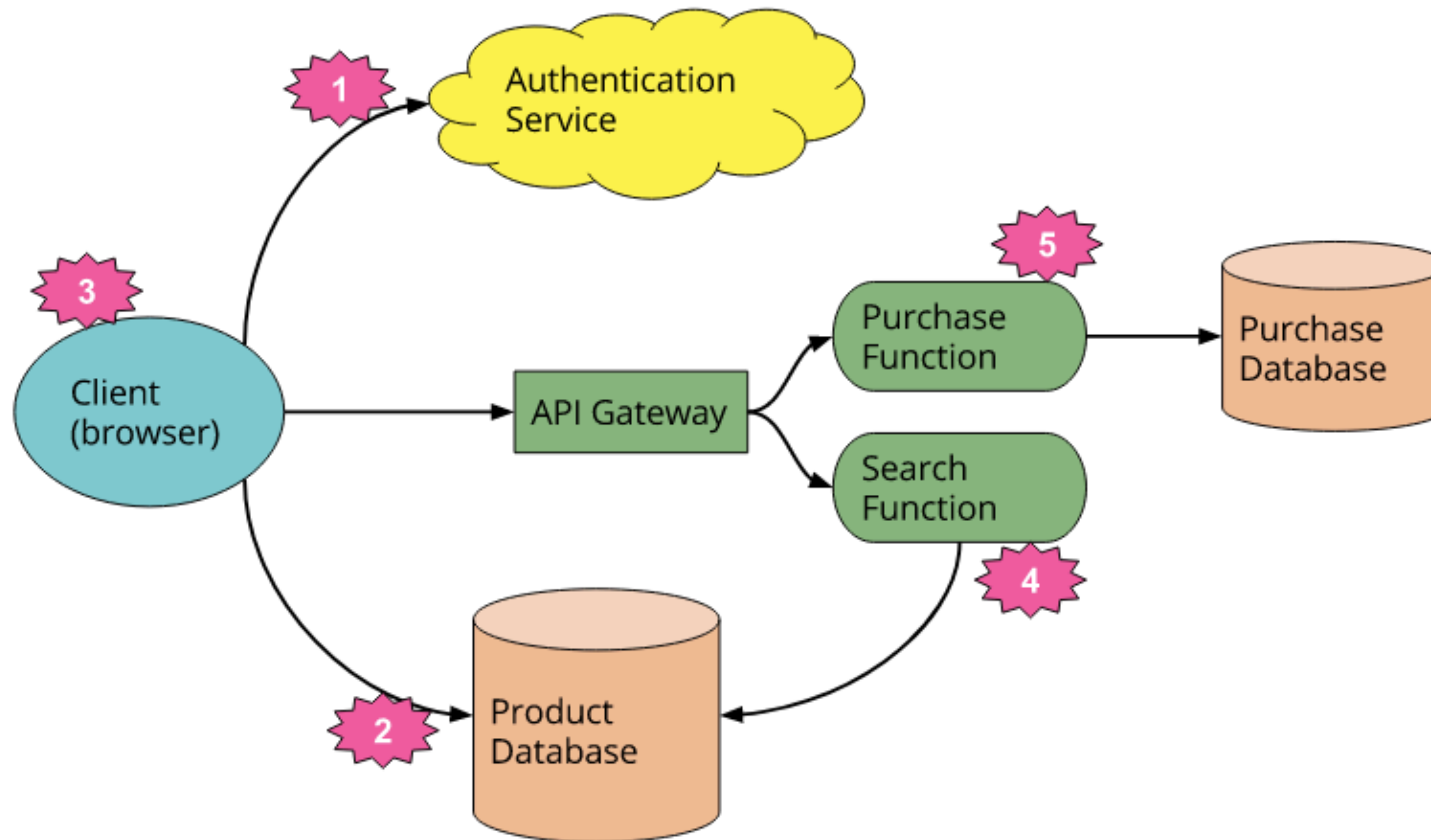
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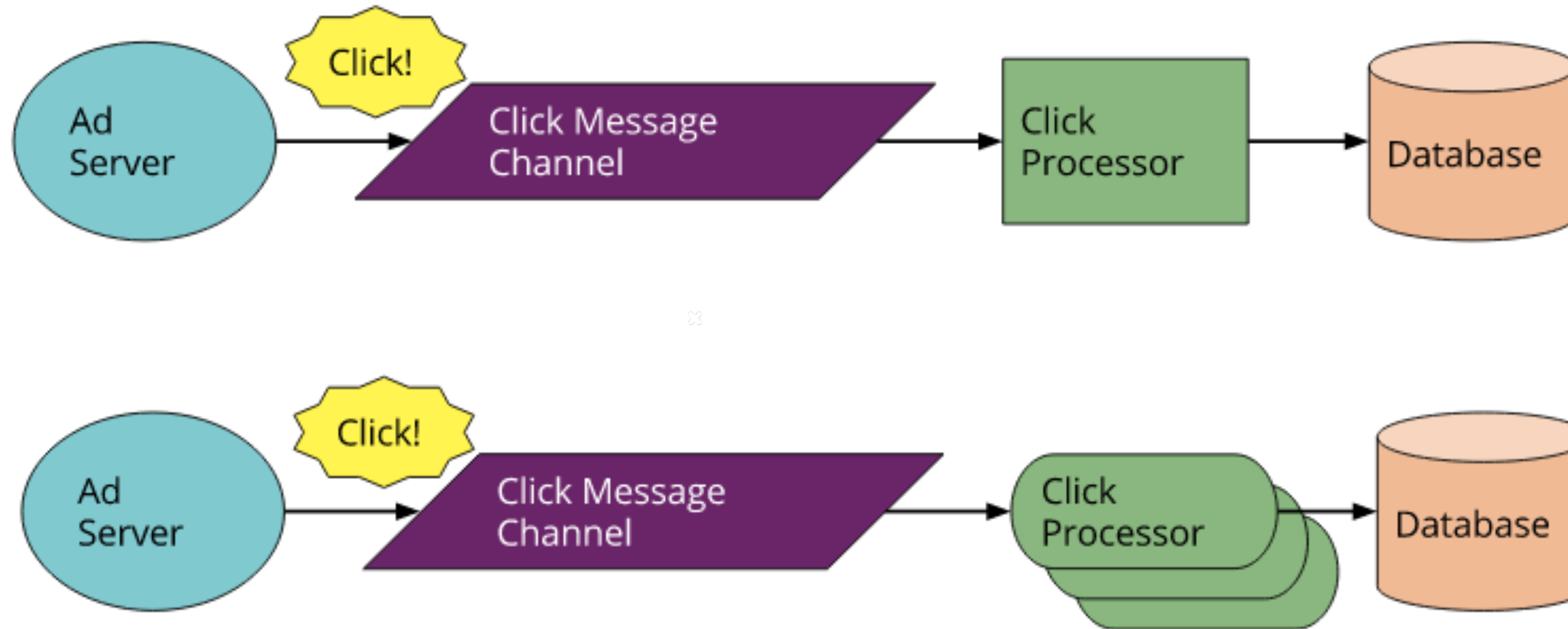
Example 1: UI-driven applications



Example 1: UI-driven applications



Example 2: Message-driven applications



Other Examples

- IoT (Internet of Things)
- Data Processing
- Chatbots



The Coca-Cola Company



iRobot®

 **Localytics**



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Explore



⌵ SleepingTest



There is no open Webtask

⌘ P to Quick Search in your
webtasks or you

can [Create a new one](#)

Powered by  Auth0 Extend



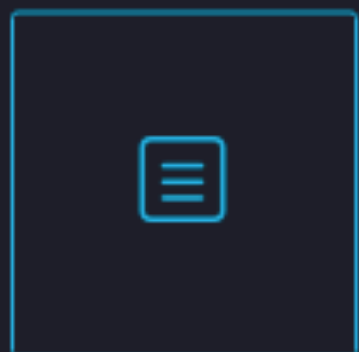


Explore



⌵ SleepingTest

Create New



Webtask Function

Make serverless endpoints

[Create empty](#)

[Select a template](#)

Powered by  Auth0 Extend



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JsonRender^x

```
/**
 * @param context {WebtaskContext}
 */
module.exports = function(context, cb) {
  cb(null, {
    event: context.query.name || 'OUGPY Encarnación Day, 2018',
    where: context.query.name || 'Encarnación, Paraguay'});
};
```



JsonRender^x

Insomnia

EnterpriseProdu

Cookies

Filter

+

OUGPYEncarnacion

GET SleepingTest

GET DataBaseTest

GET

https://wt-5284972561f7f3b5d409c4fc3df66c71

Send

200 OK

TIME 3.08 s

SIZE 73 B

↺

Body

Auth

Query

Header

Docs

Preview

Header 8

Cookie

Timeline

```
1 {  
2   "event": "OUGPY Encarnación Day, 2018",  
3   "where": "Encarnación, Paraguay"  
4 }
```

Pasemos a Webtask



MySQL Connection

What would you like to do with Oracle Cloud Services?



Develop and Deploy
Applications



Create
Infrastructure



Migrate
Application Environments



Store and Analyze
Data



Integrate Applications
and Manage Business Processes

MySQL Connection

Guided Journey

Explore what you can do with
Oracle Cloud services

Create Instance

Provision a new service in
minutes

Account Management

Administer and manage your
account and orders

Customize Dashboard

Specify which services
appear on the dashboard










MySQL Connection

Create Instance

QuickStart Services

All Services


<div> Compute Subscription ID: 1751045</div> <div>Create</div>	<div> Compute Classic Upgrade to Dedicated Compute</div> <div>Create</div>
<div> Storage Classic Subscription ID: 1751045</div> <div>Create</div>	<div> Java Subscription ID: 1751045</div> <div>Create</div>
<div> Database Subscription ID: 1751045</div> <div>Create</div>	<div> Container Classic Subscription ID: 1751045</div> <div>Create</div>
<div> Integration Cloud Subscription ID: 1751045</div> <div>Create</div>	

MySQL Connection


Create Instance

QuickStart Services


All Services

 **Compute**
Subscription ID: 1751045


Create

 **Storage Classic**
Subscription ID: 1751045


Create

 **Database**
Subscription ID: 1751045


Create

 **Integration Cloud**
Subscription ID: 1751045


Create

 **Compute Classic**
[Upgrade to Dedicated Compute](#)


Create

 **Java**
Subscription ID: 1751045

Create

 **Container Classic**
Subscription ID: 1751045

Create

The Ambassador logo is a triangular shield with a blue border. Inside, there's a stylized orange and white rocket or torch pointing upwards, with a white star at the top. The word "AMBASSADOR" is written in white capital letters at the bottom of the shield.

MySQL Connection


Create Instance

QuickStart Services

All Services

Filter...


Data Management



Database

Subscription ID: 1751045


Create



Big Data - Comput...

Subscription ID: 1751045


Create



Event Hub - Dedic...

Subscription ID: 1751045


Create



MySQL

Subscription ID: 1751045


Create



Database (OCI)

Subscription ID: 1751045


Create



Event Hub

Subscription ID: 1751045


Create



Data Hub Cloud Se...

Subscription ID: 1751045

Create

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Developer
Champion

MySQL Connection

ORACLE[®] CLOUD My Services

Oracle MySQL Cloud Service

QuickStarts Welcome!

Instances Activity

As of Mar 16, 2018 5:24:16 PM UTC

Instances

[Create Instance](#)

You don't have any instances. After meeting the [prerequisites](#), use this button to create an instance.

Need help creating the instance?
[- Watch a video](#)

[▶ Instance Create and Delete History](#)



MySQL Connection

ORACLE[®] MySQL Cloud Service

ME

Create New Instance

Cancel

●

○

○

Instance

Details

Confirm

Next >

Instance
Provide basic service instance information

* Instance Name

DataBaseTest

?

Description

For Testing Serverless

?

Notification Email

mercedes.wyss@powerwtechnol

?

* Region

No Preference

?

Tags

+

?

MySQL Connection

Service Details

Provide details for this Oracle MySQL Cloud Service [Enterprise Edition] instance.

 Selection Summary

Configuration

* Compute Shape ?

* SSH Public Key [Edit](#) ?

Use High Performance Storage ☐ ?

MySQL Configuration

* Usable Database Storage (GB) ?

* Administration Username ?

* Password ?

* Confirm Password ?

* Database Schema Name ?

Server Character Set ?

Timezone ?

* MySQL Port ?

Configure MySQL ?

Backup and Recovery Configuration

Backup Destination ?

Initialize Data From Backup

* Create Instance from Existing Backup ?



MySQL Connection

[< Previous](#) [Cancel](#)

Instance

Details

Confirm

[Create >](#)

Confirmation

Confirm your responses and create service instance.

Service

Instance Name: DataBaseTest
Description: For Testing Serverless
Notification Email: mercedes.wyss@powerwtechnol...
Service Level: Oracle MySQL Cloud Service
Software Release: MySQL Server Release 5.7.21
Software Edition: Enterprise Edition
Region: No Preference
Compute Shape: OC3 - 1.0 OCPU, 7.5GB RAM
SSH Public Key: ssh-rsa AAAAB3NzaC1yc2EAAA...
Use High Performance Storage: false

Backup and Recovery Configuration

Backup Destination: None

Instantiate from Backup

Create Instance from Existing Backup: No

MySQL Configuration

Software Edition: Enterprise Edition
Usable Database Storage (GB): 25

MySQL Connection

```
var mysql = require('mysql');

module.exports = function (ctx, cb) {
  // Create MySQL connection on first invocation
  if (!global.connection) {
  }
};
```



MySQL Connection

```
var secrets = ['HOST', 'DB', 'USER', 'PASSWORD'];  
    for (var i = 0; i < secrets.length; i++)  
        if (!ctx.secrets[secrets[i]])  
            return cb(new Error('You must specify the '  
                + secrets[i]  
                + ' secret when creating the webtask.'));
```

MySQL Connection

```
global.connection = mysql.createConnection({  
    host      : ctx.secrets.HOST,  
    user      : ctx.secrets.USER,  
    password  : ctx.secrets.PASSWORD,  
    database  : ctx.secrets.DB  
});
```



MySQL Connection

```
global.connection.connect(function(err) {  
    if (err) {  
        console.error('error connecting: ' + err.stack);  
        return;  
    }  
  
    console.log('connected as id ' + connection.threadId);  
});
```


MySQL Connection

```
global.connection.query(  
    'SELECT * FROM recipes ORDER BY recipe_id limit 100',  
    cb);  
global.connection.end();
```



MySQL Connection

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fn Project

FNProject

- Fn Server (FaaS)
- Fn Load Balancer
- Fn FDK's
- Fn Flow



FNProject

- Multi Cloud
- Developer Experience
- Container Native
- Vision and Deep

