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

Duke's Choice Award

2016 Winner

Java

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ORACLE Developer Champion

Devs +502

Comunidad Desarrolladores en Tecnologías < Google > en Guatemala

JDuchess Guatemala

- **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

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“**Serverless architectures** refer to applications that significantly **depend** on third-party services (knows 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)

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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)

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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

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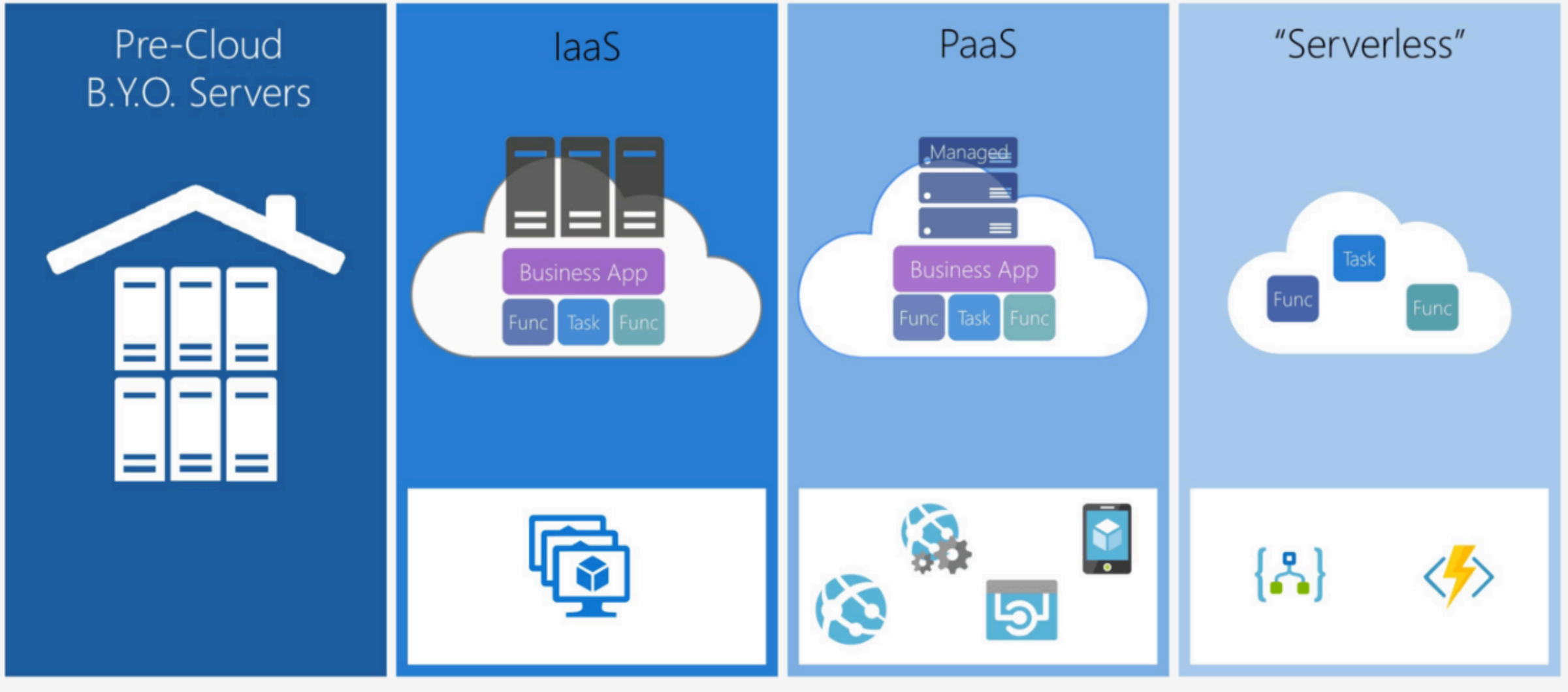
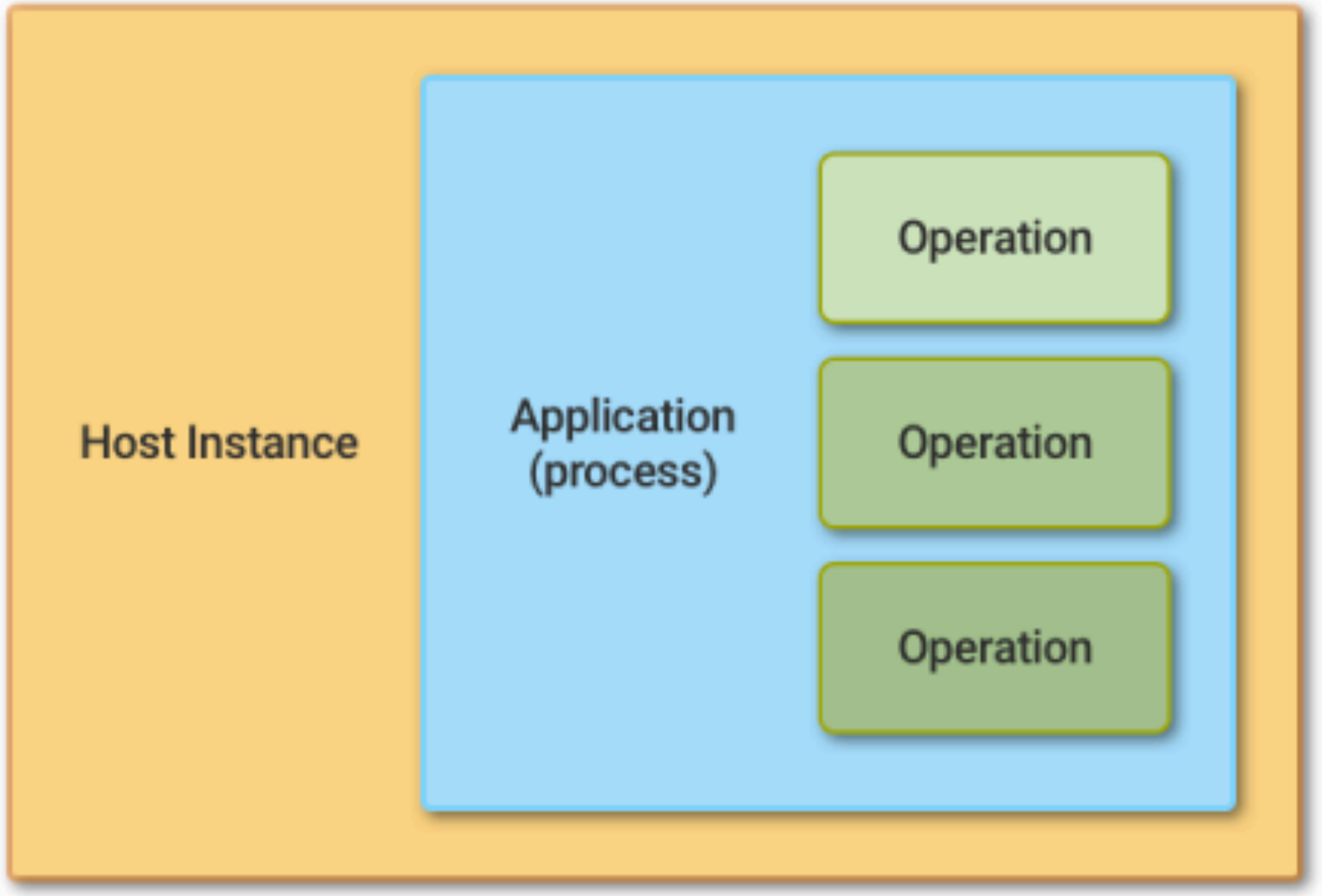

Pre-Cloud
B.Y.O. Servers
IaaS
Business App
Func
Task
Func
PaaS
Managed
Business App
Func
Task
Func
"Serverless"
Task
Func
Func



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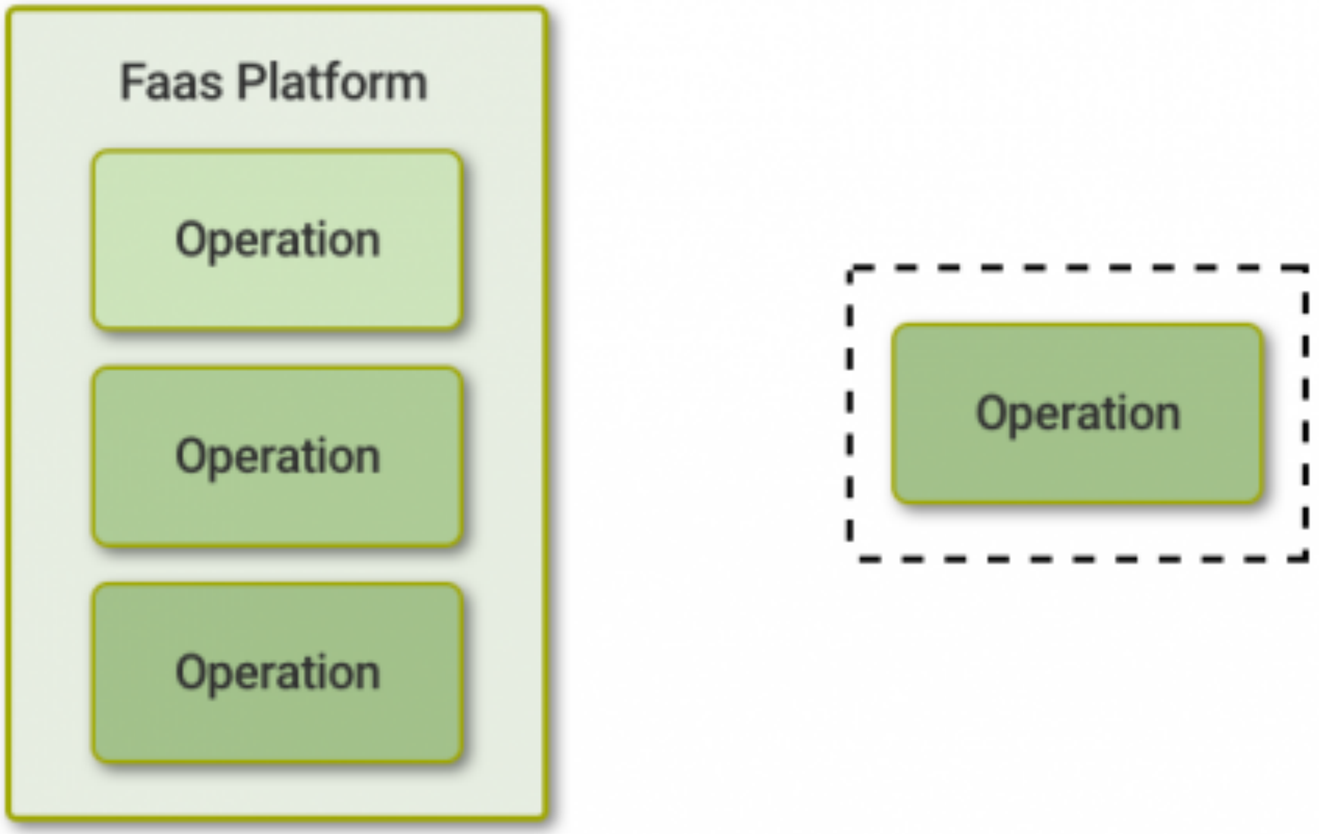
Faas Platform
Operation
Operation
Operation
Operation

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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 instant sizes.
- Services that are event-driven and instantaneously scalable.

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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.

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FaaS Execution Duration

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

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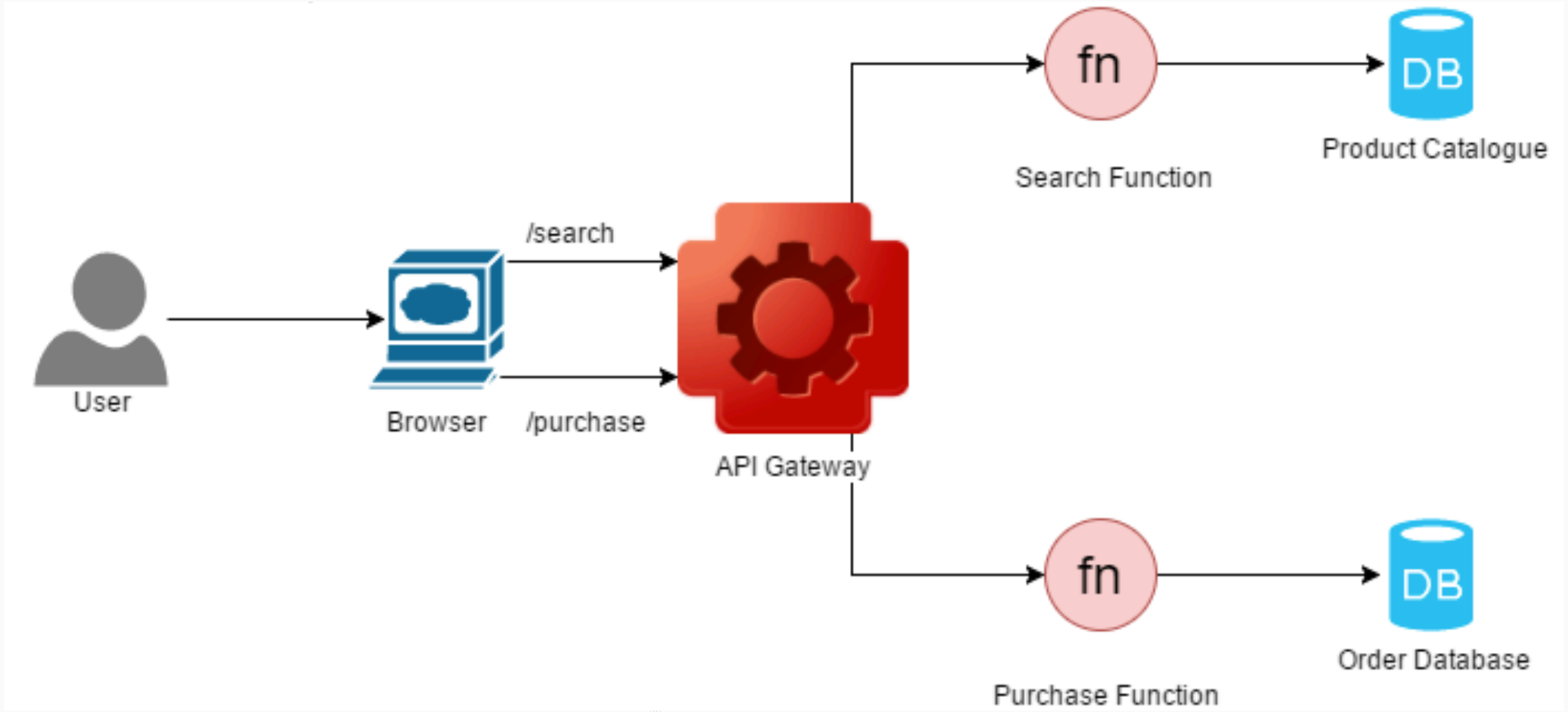
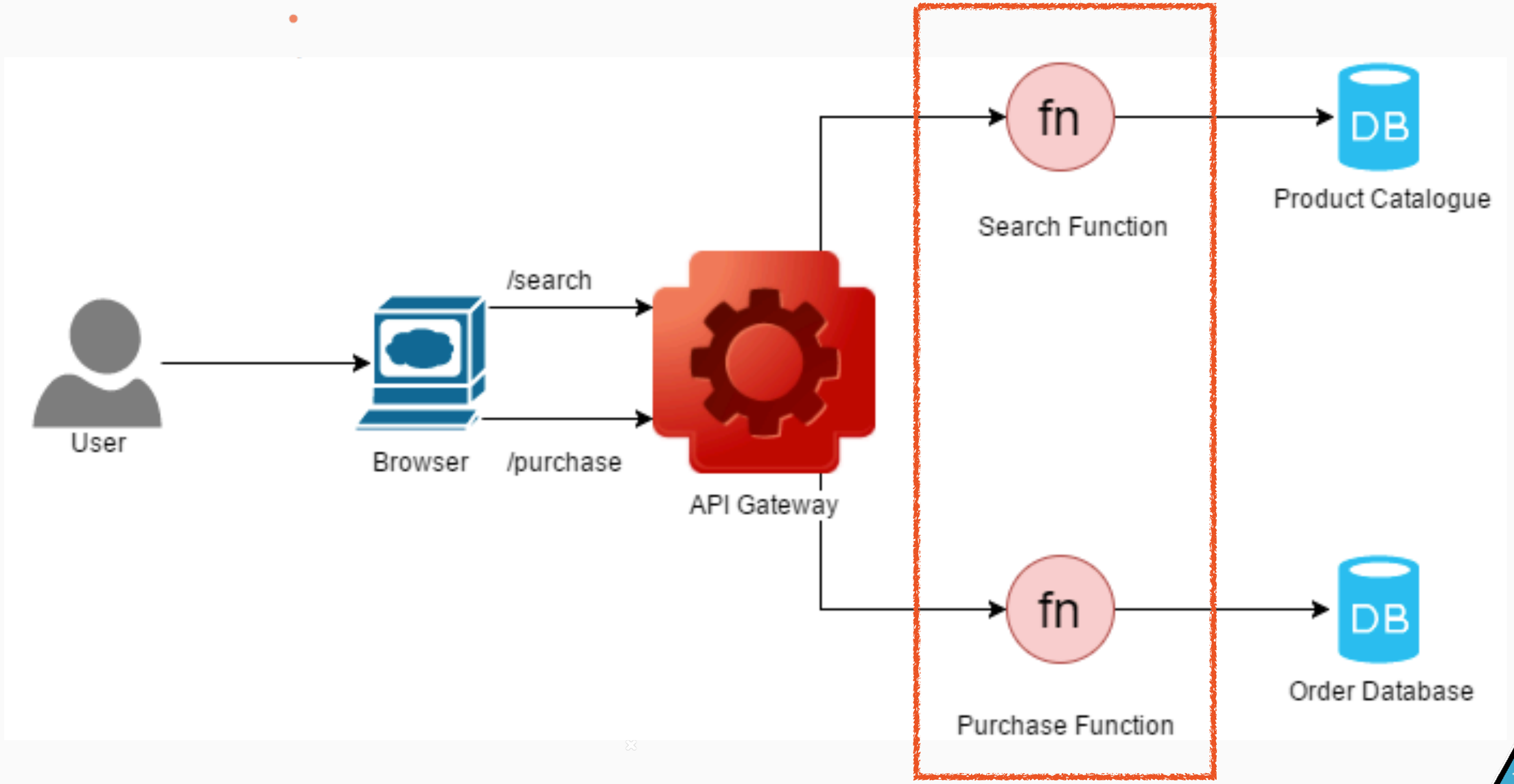

fn
DB
Product Catalogue
Search Function
/search
User
Browser
/purchase
API Gateway
fn
DB
Order Database
Purchase Function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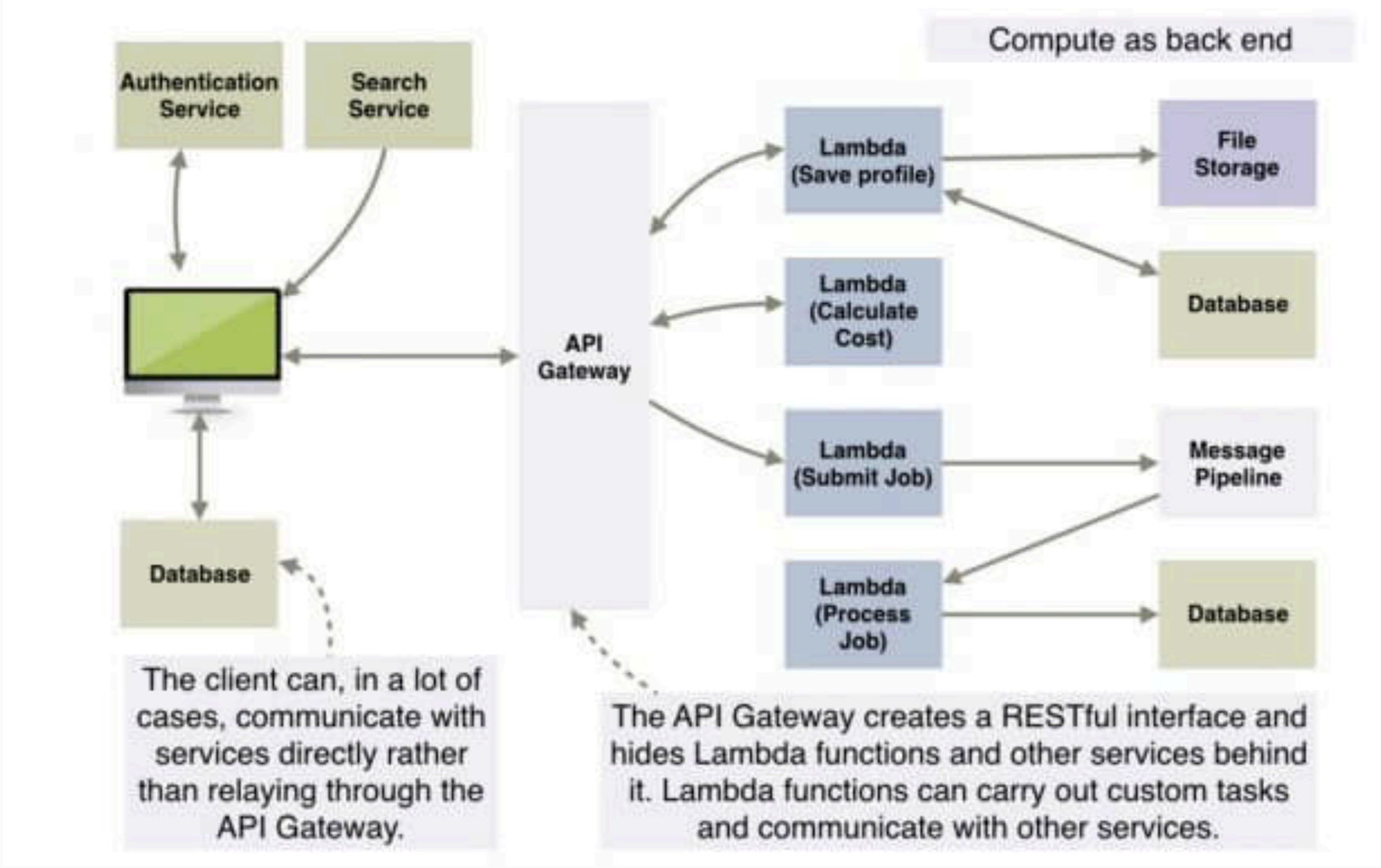

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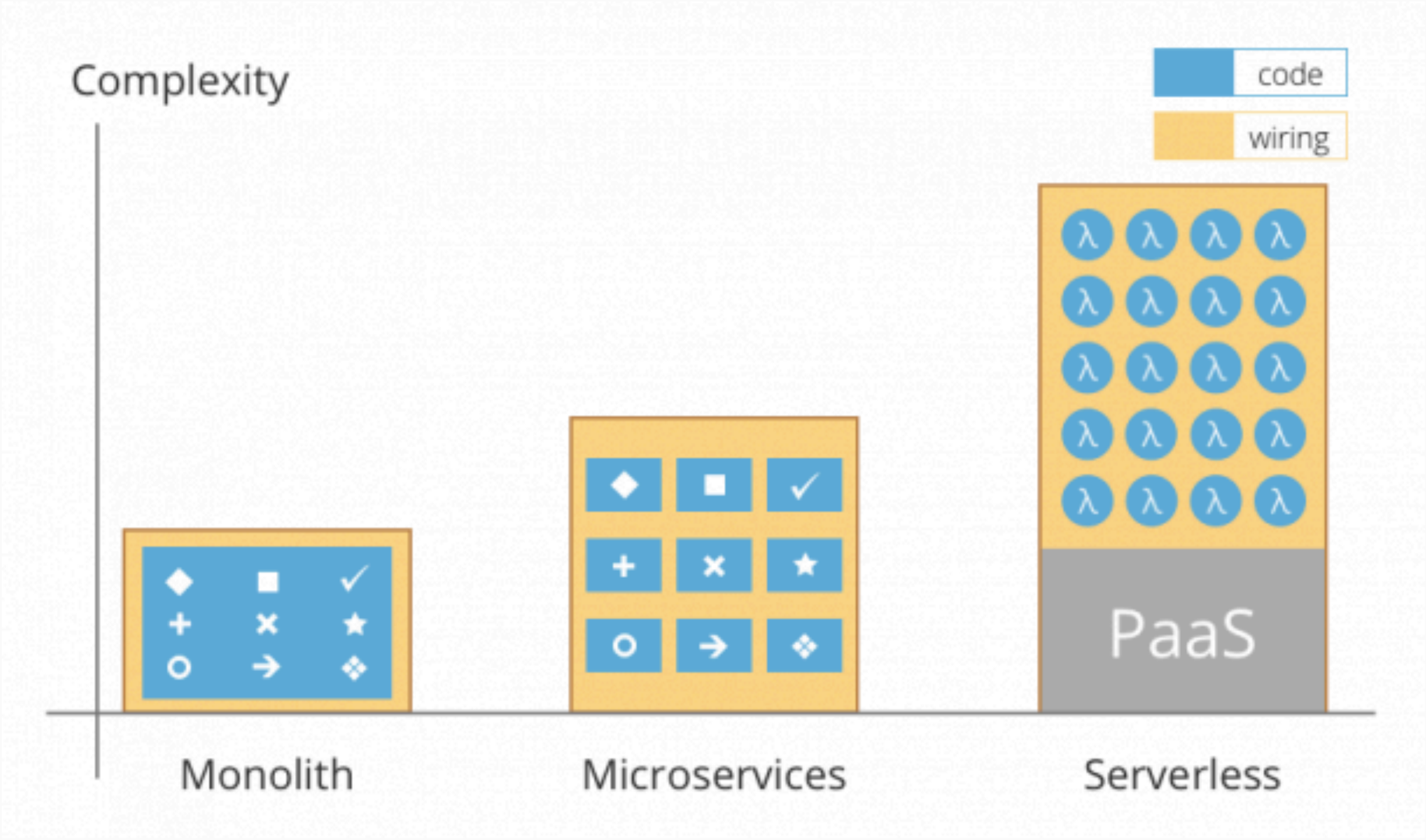
Complexity
code
wiring
PaaS
Monolith
Microservices
Serverless

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Benefits

- Time-to-market Improvement
- Reduced Operational Cost
- Infrastructure Costo 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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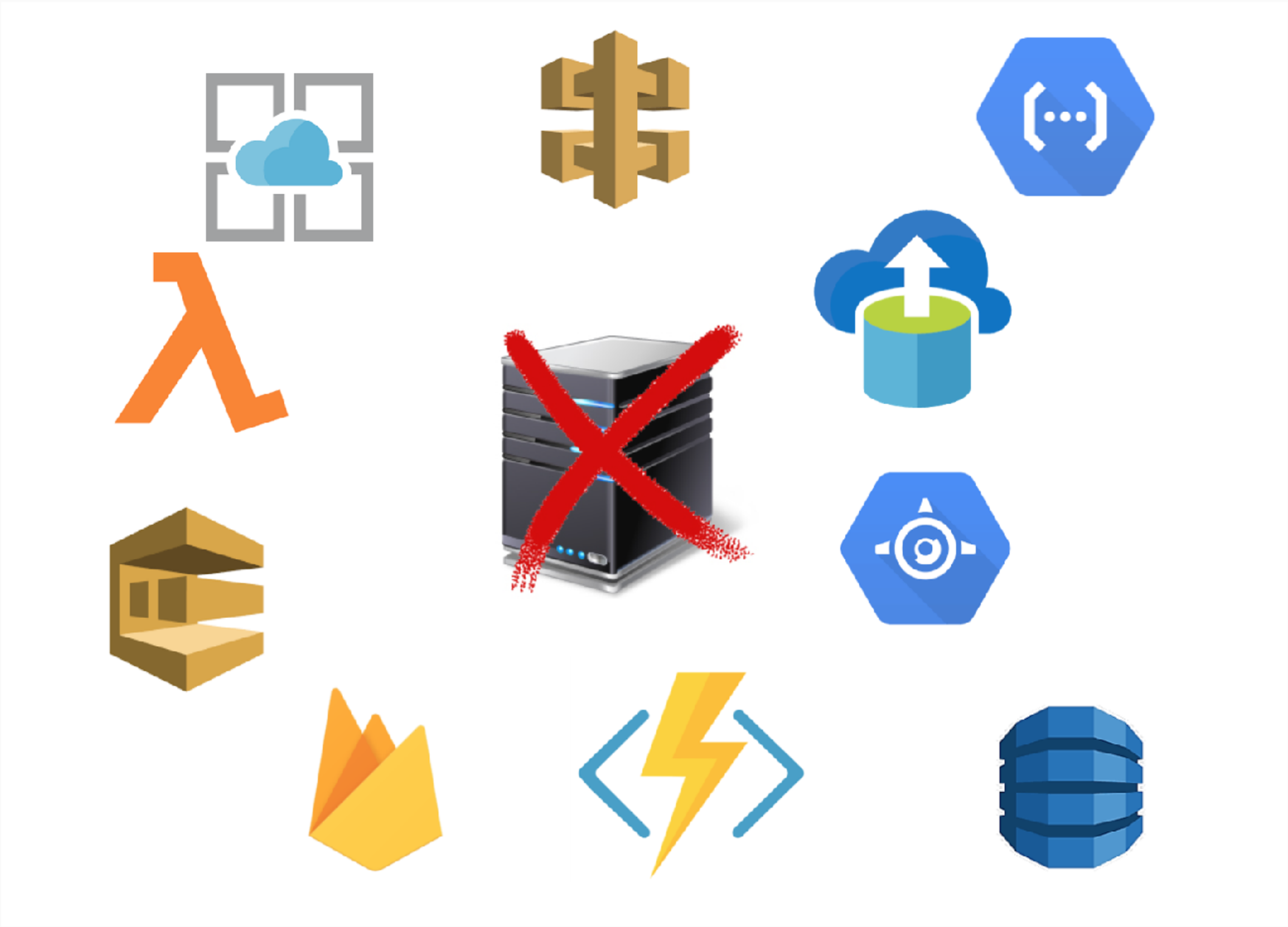
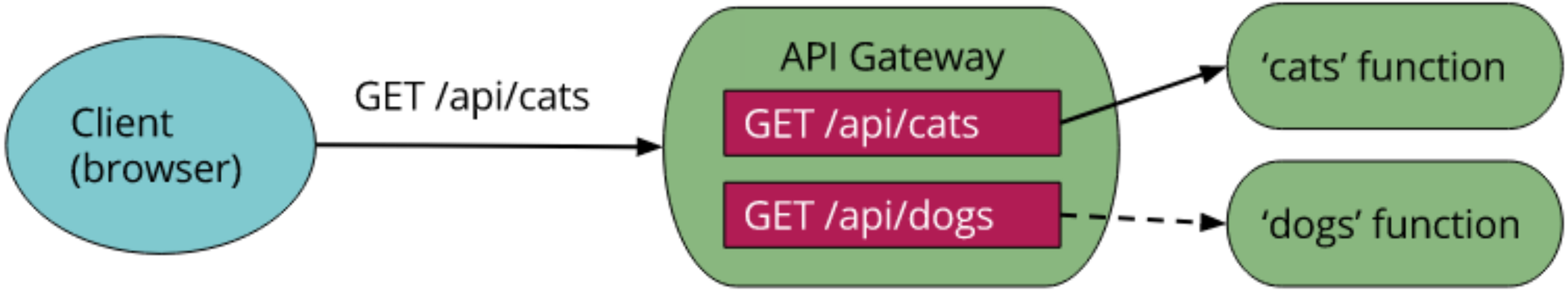


API Gateway



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Example 1: UI-driven applications

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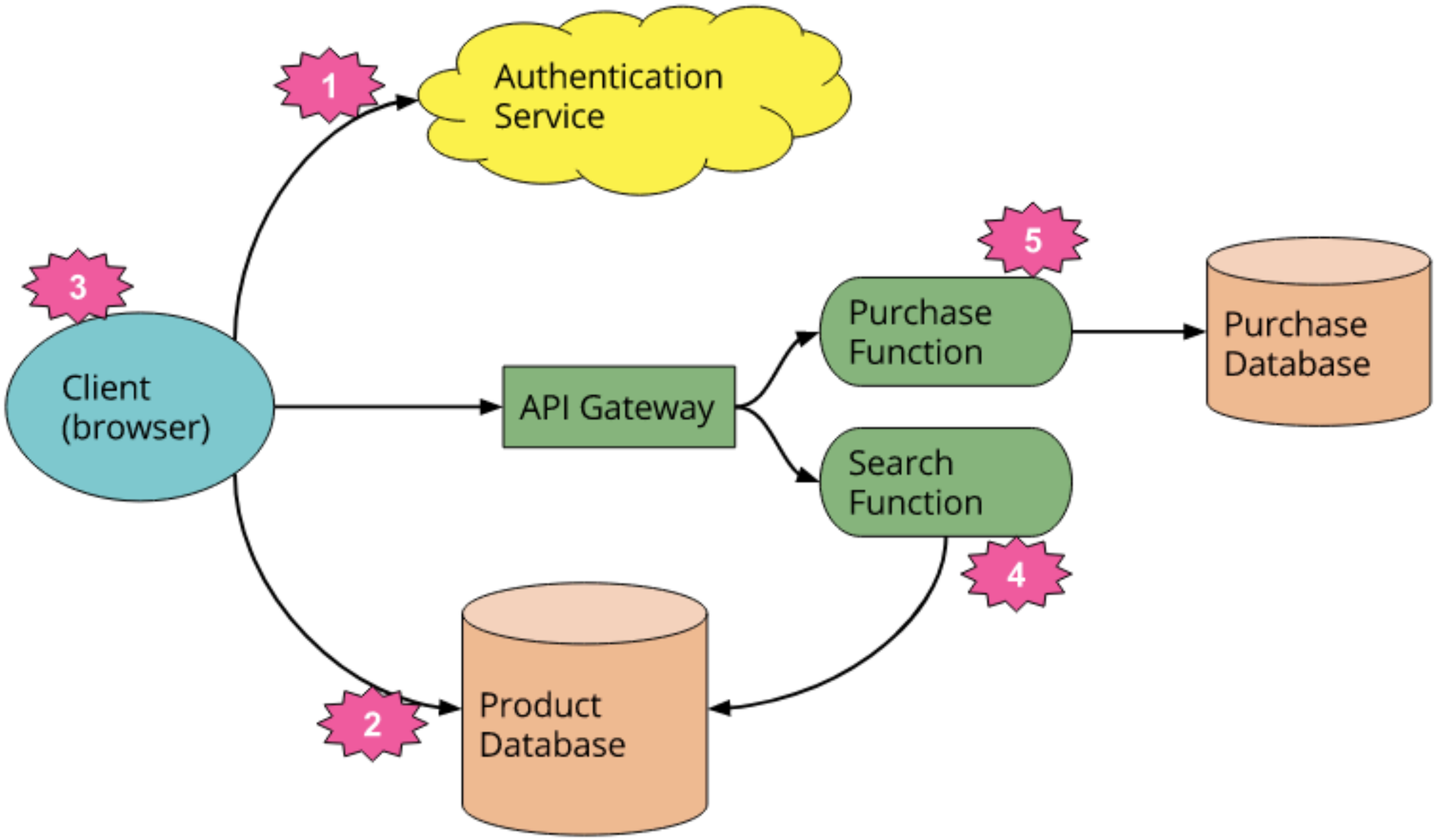
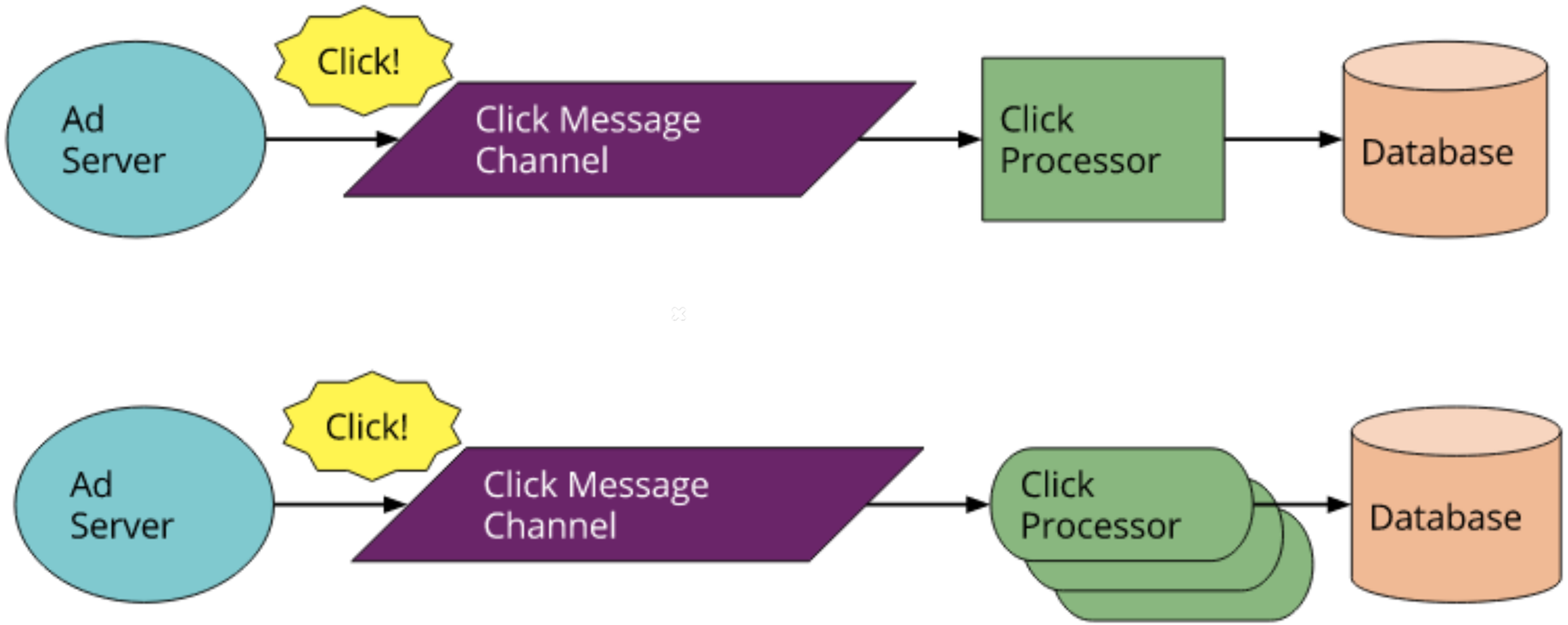


Example 2: Message-driven applications



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Other Examples

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

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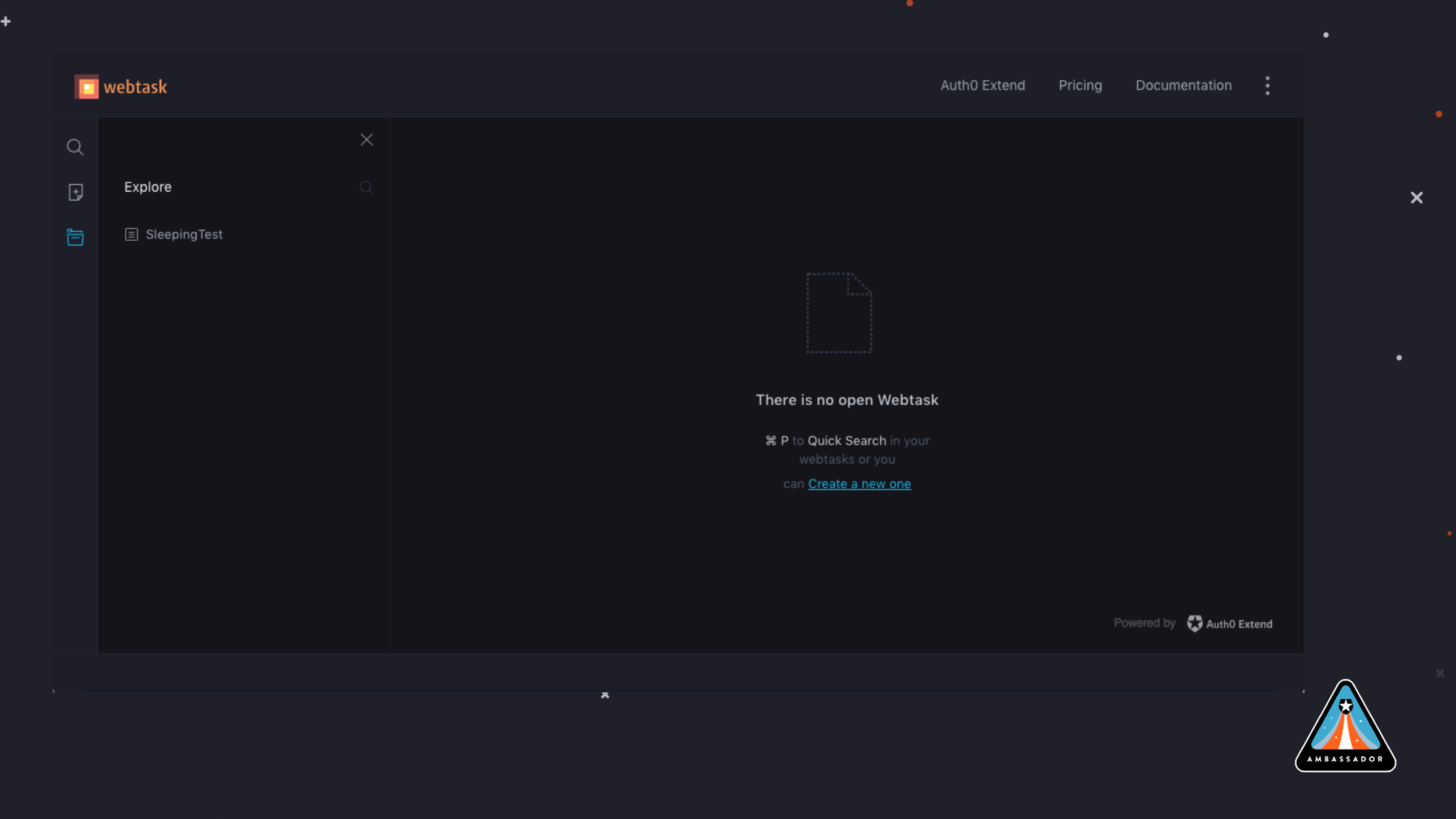
webtask
Auth0 Extend
Pricing
Documentation
Explore
SleepingTest
There is no open Webtask
⌘ P to Quick Search in your webtasks or you can Create a new one
Powered by Auth0 Extend
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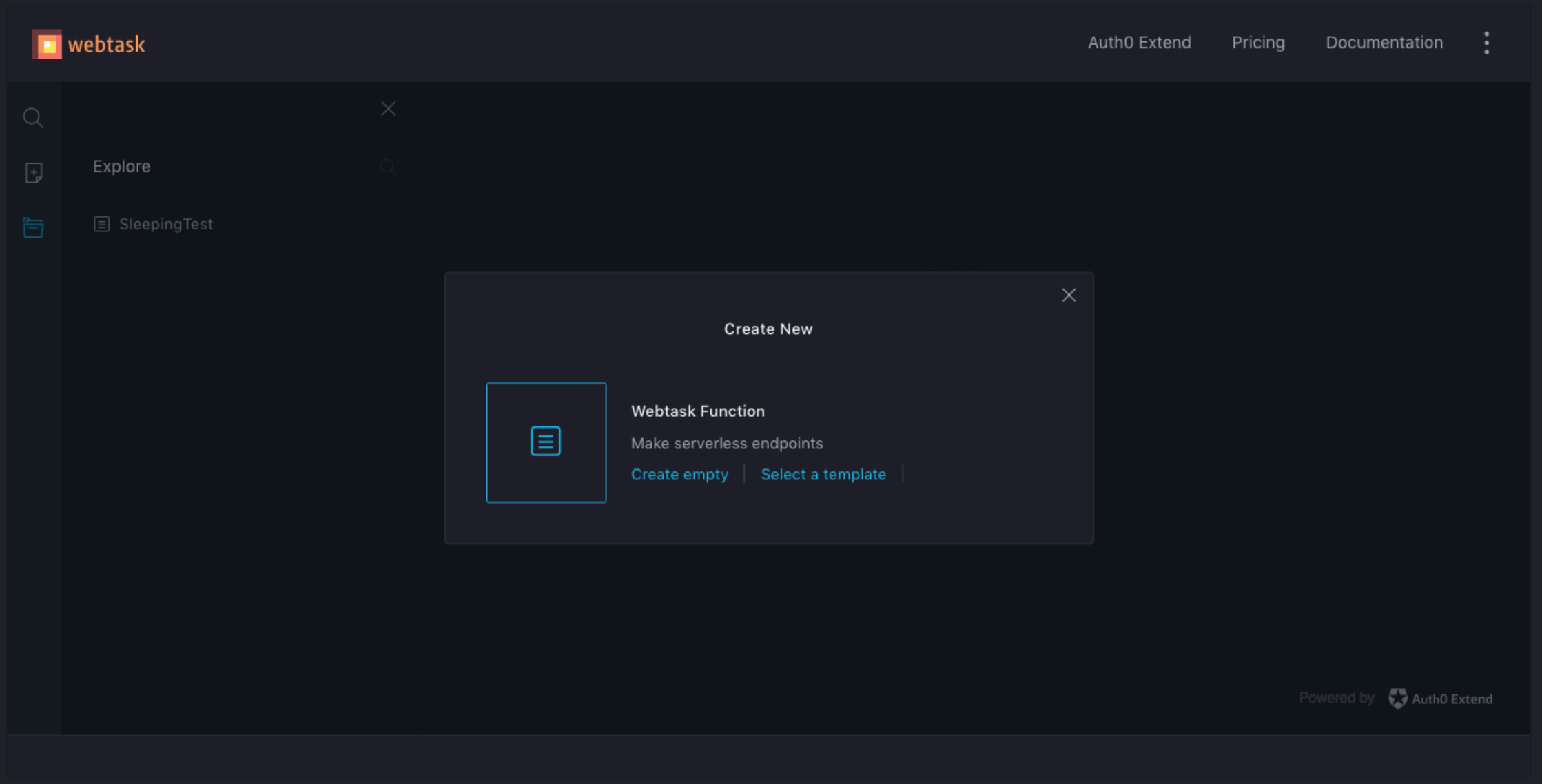

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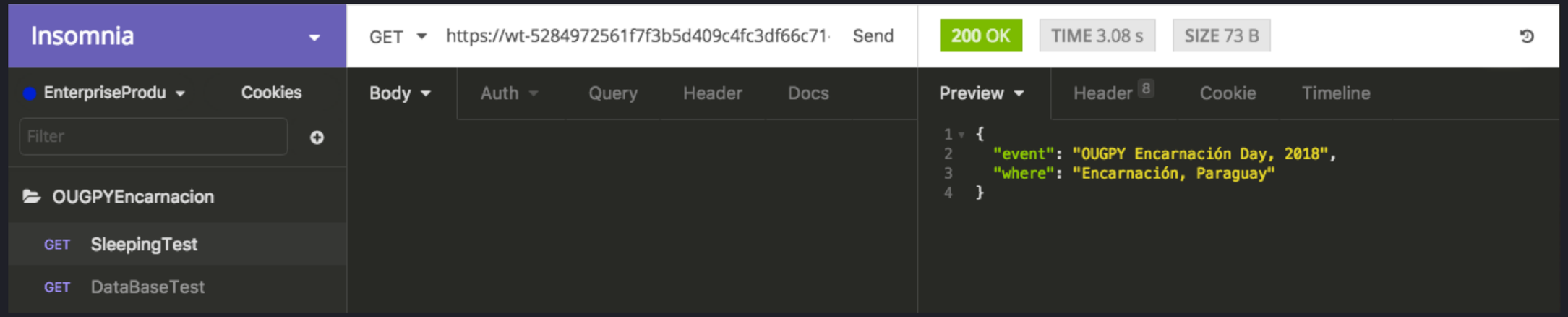
JsonRender

```
/**
* @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



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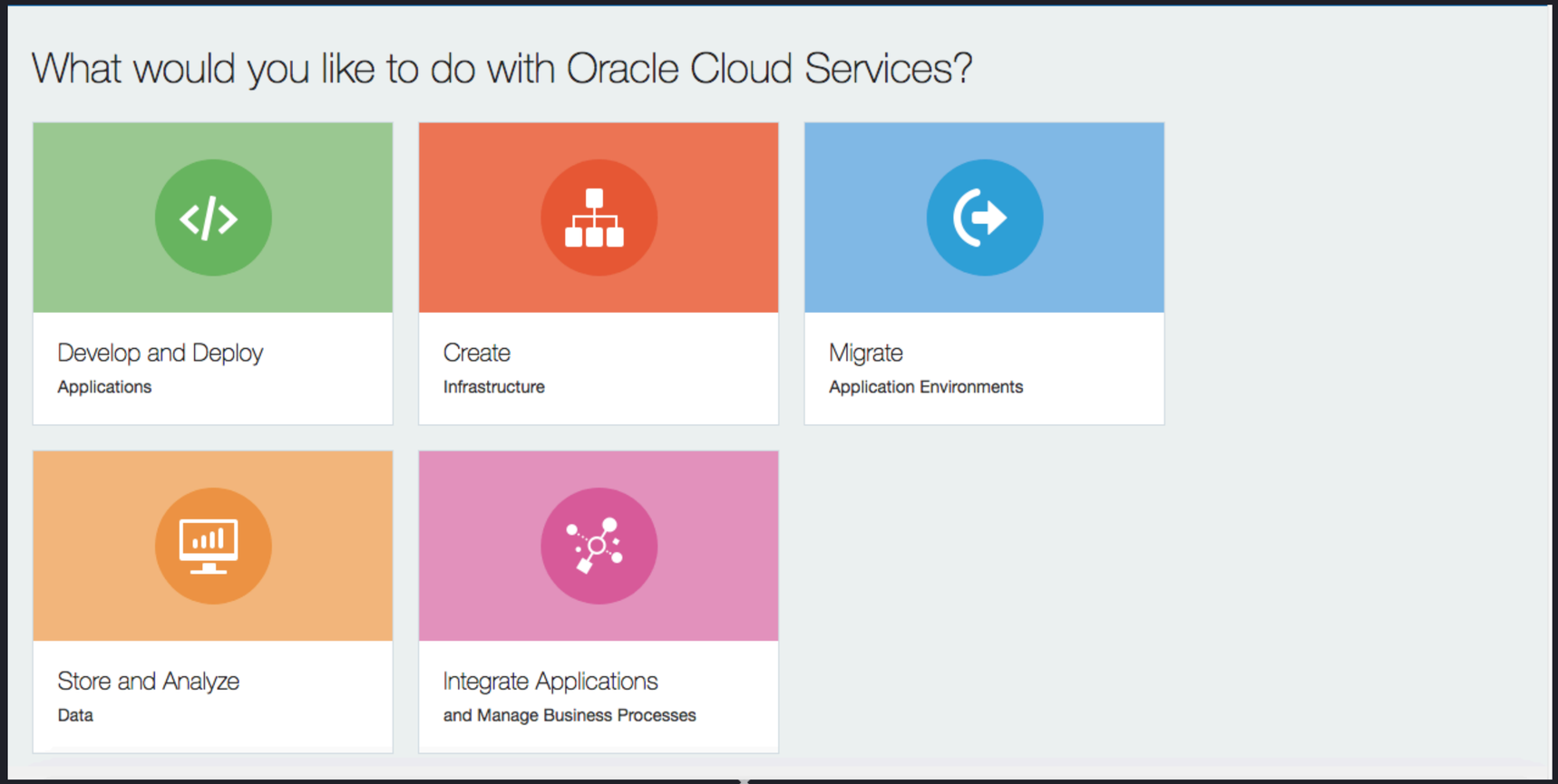
Pasemos a Webtask

MySQL Connection



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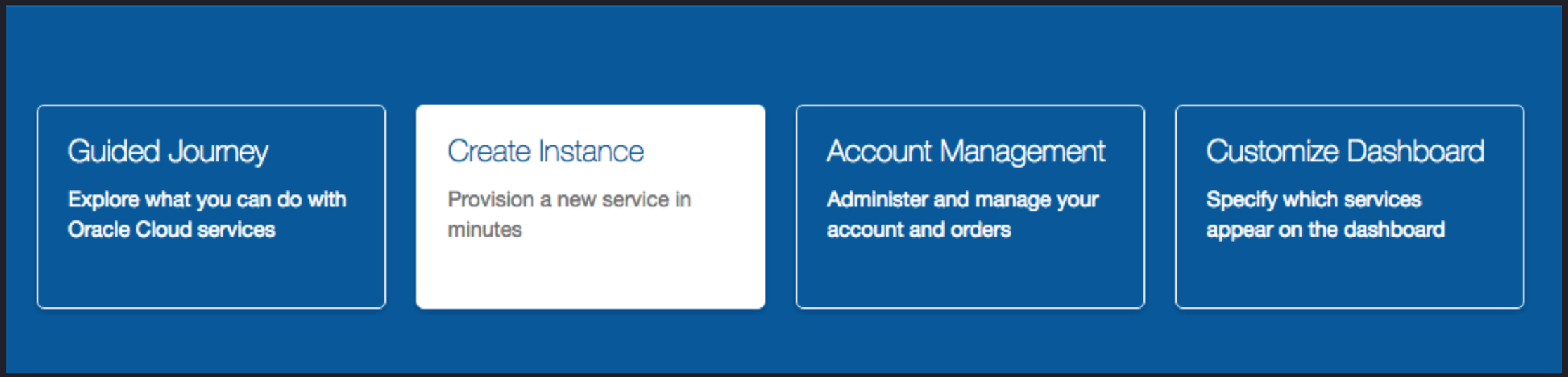
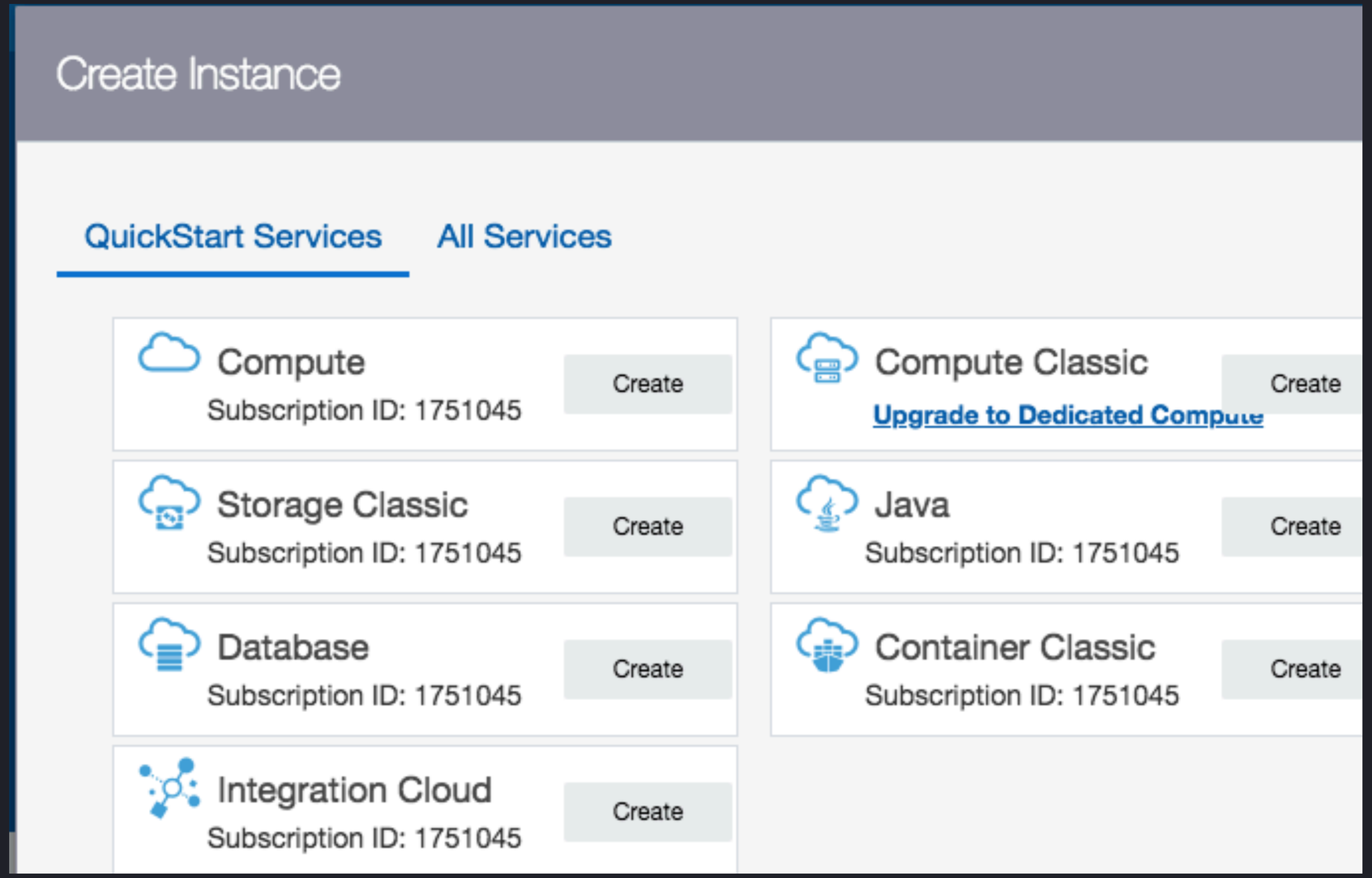


MySQL Connection



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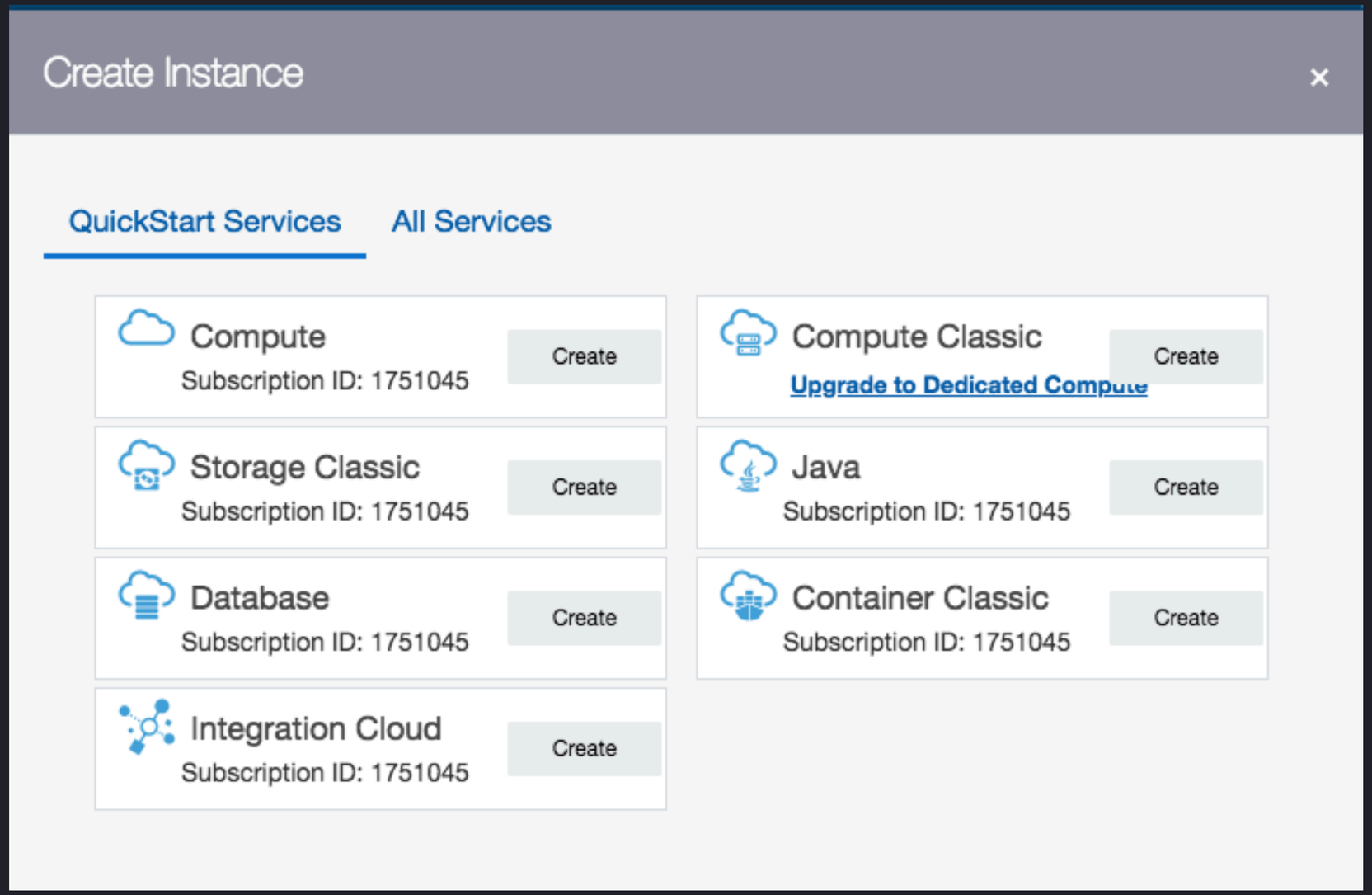

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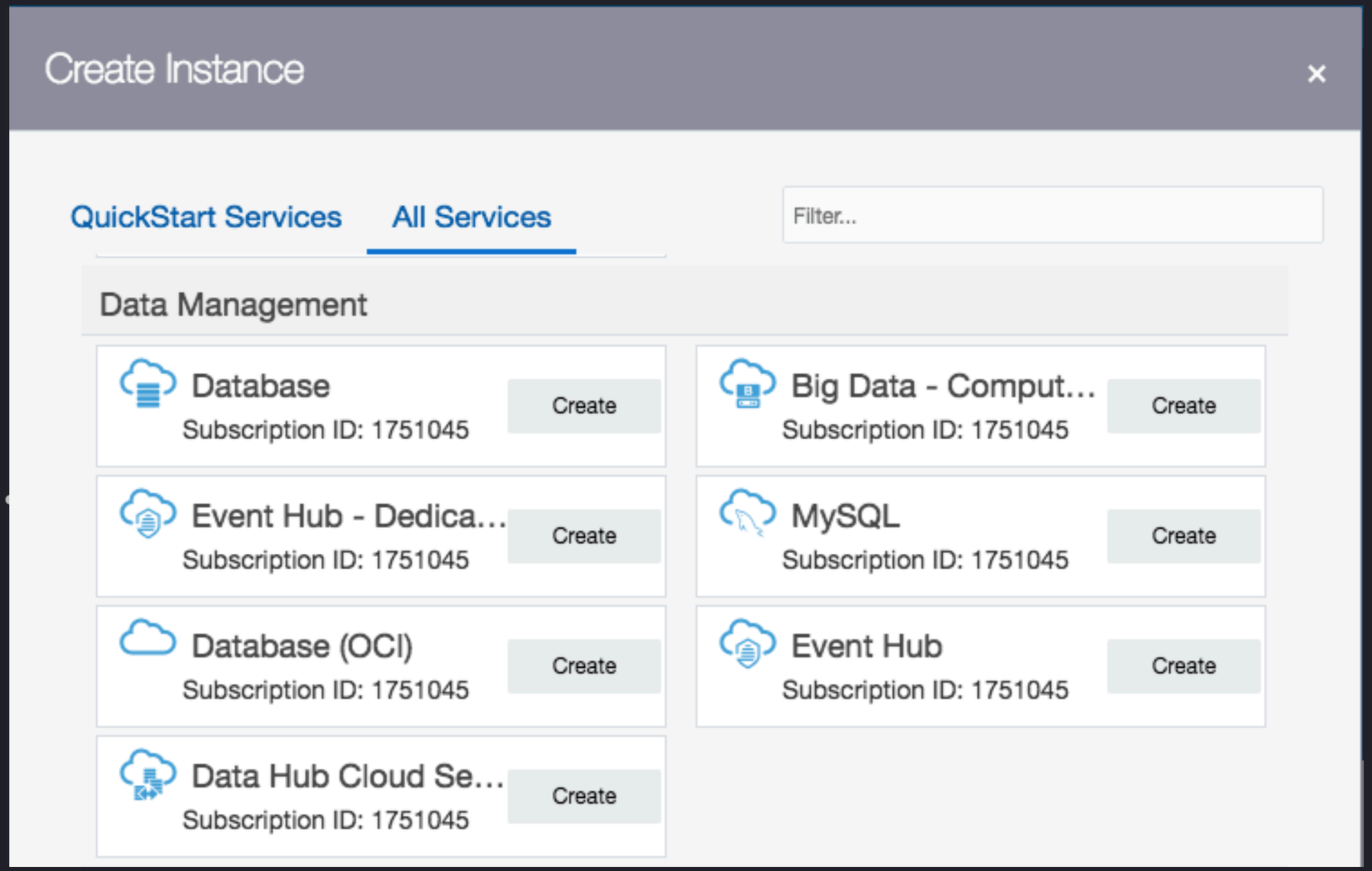

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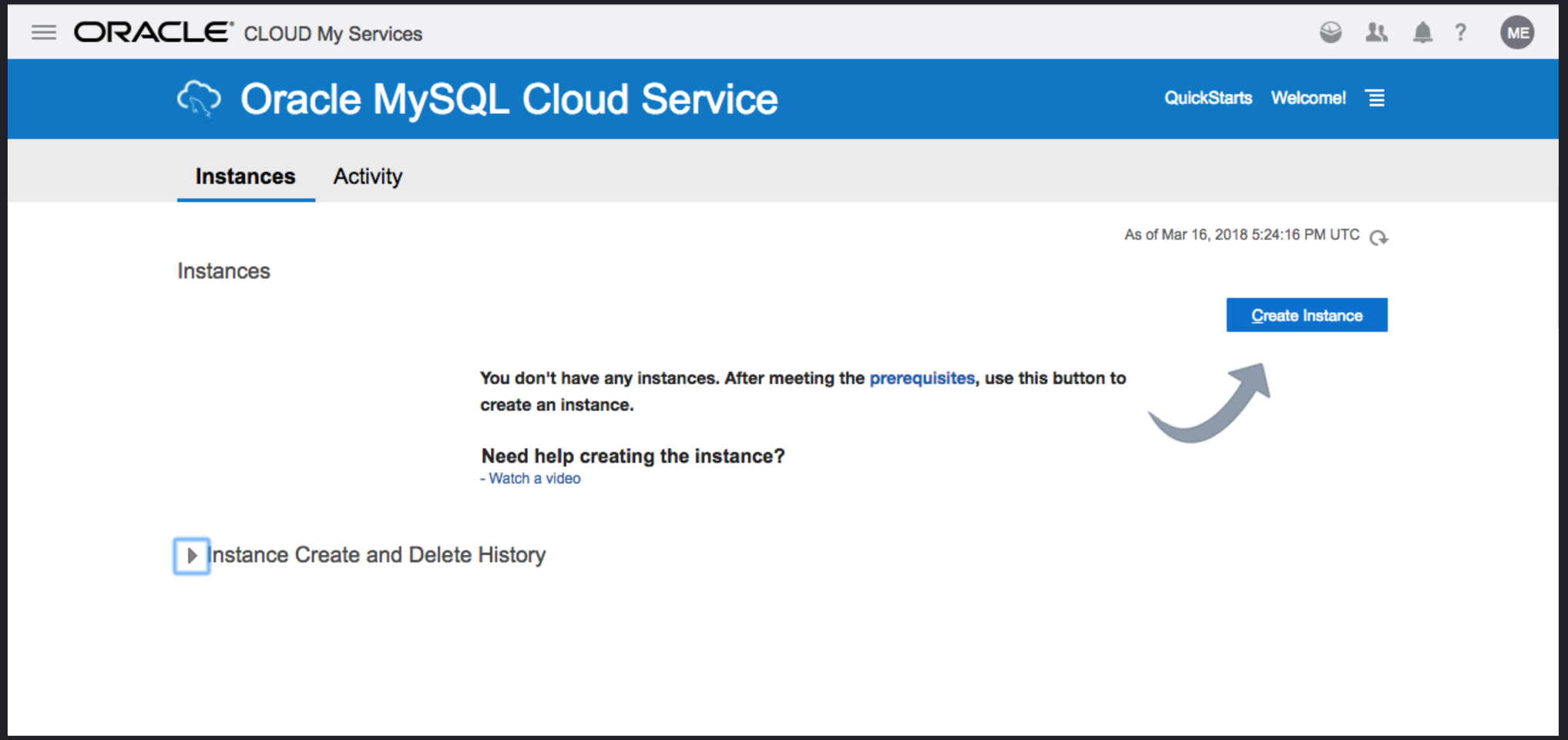

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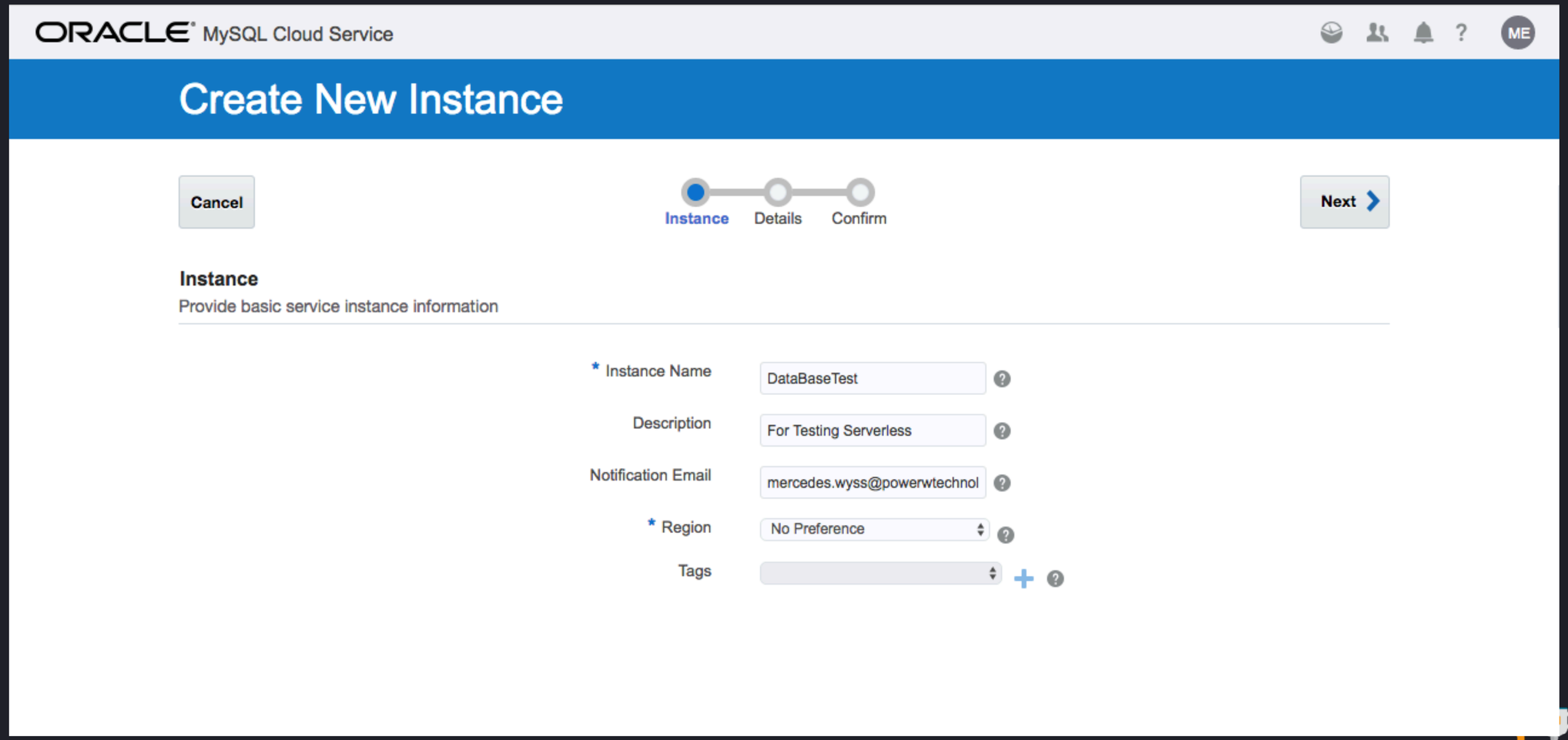

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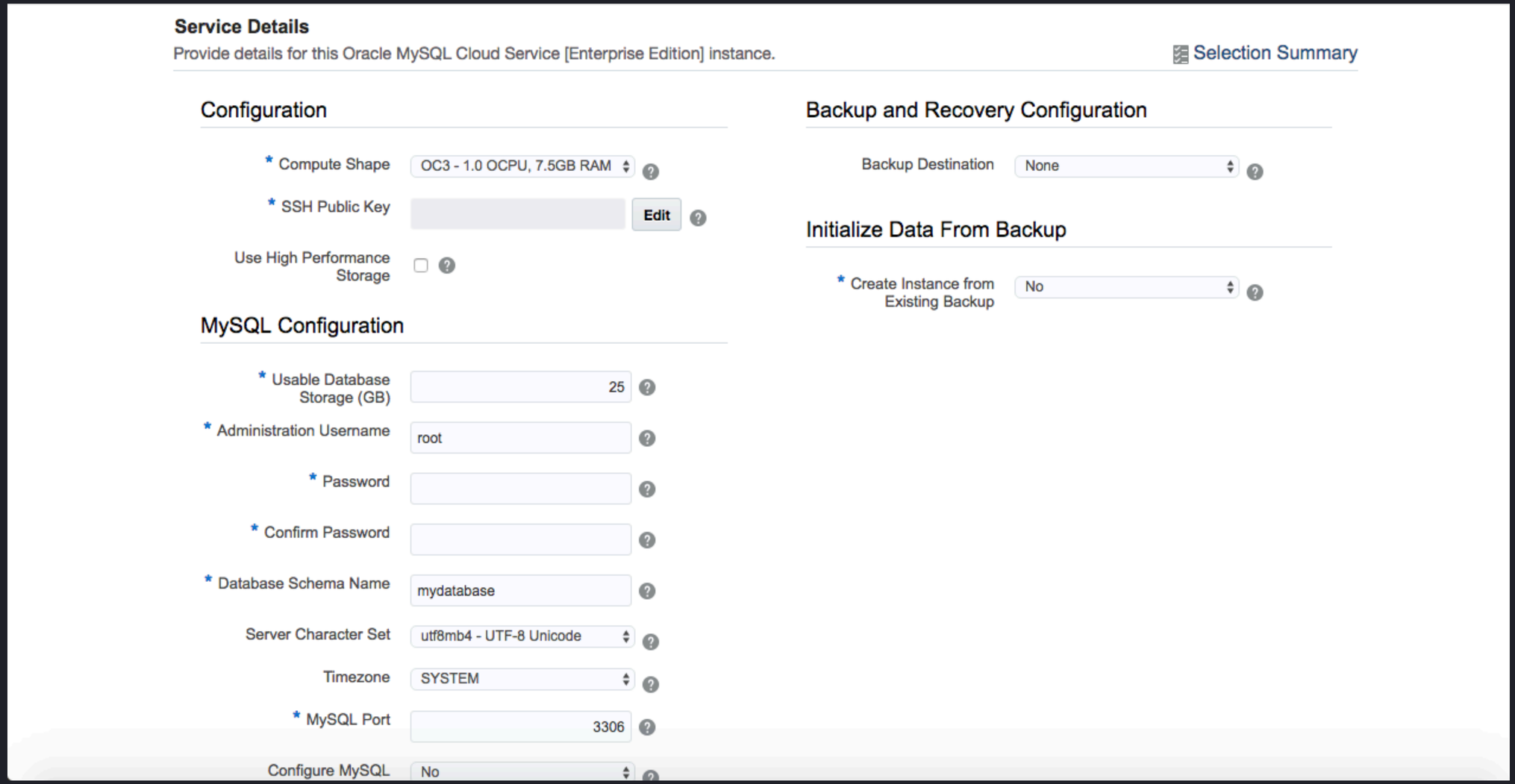
MySQL Connection



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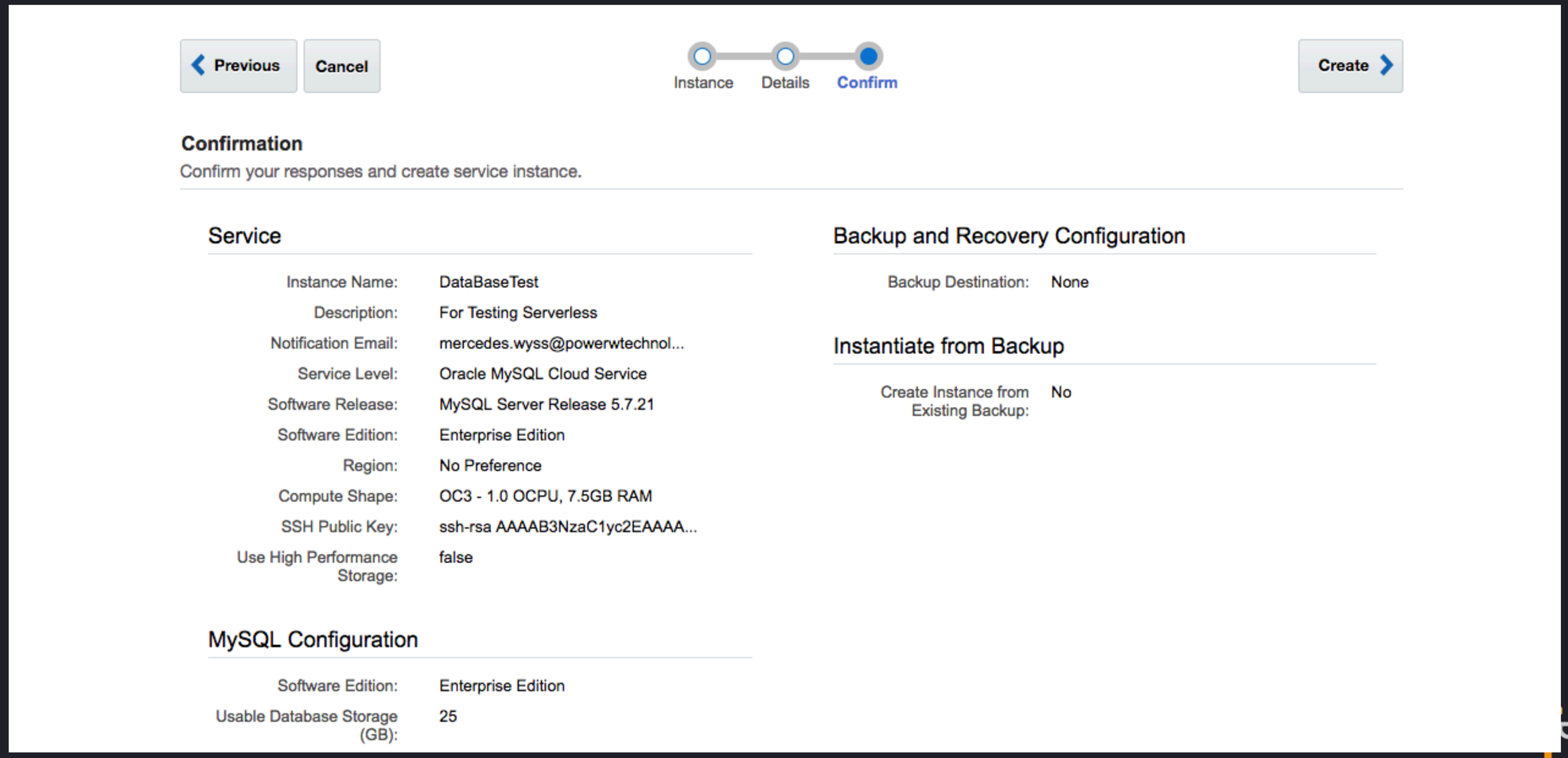
MySQL Connection



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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.'));
```

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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);
        });
```

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MySQL Connection

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

MySQL Connection

Pasemos a Webtask

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fn Project

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FNProject

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

FNProject

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