

Serverless Architecture

Software Architecture

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Oxymoron 1. Serverless

Logic running on someone else's server.

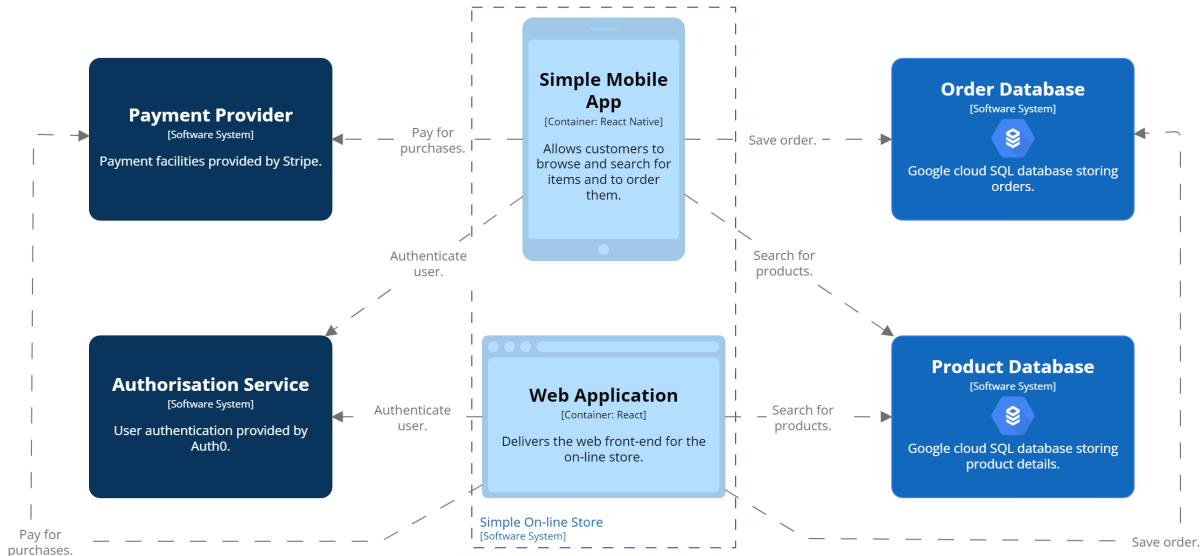
Definition 0. Backend as a Service (BaaS)

Cloud-hosted applications or services that deliver functionality used by an application front-end.

BaaS Iceberg *[Brunko, 2019]*



BaaS Example



Definition 0. Functions as a Service (FaaS)

Application logic that is triggered by an event and runs in a *transient*, *stateless* compute node.

FaaS Iceberg *[Brunko, 2019]*



FaaS Example



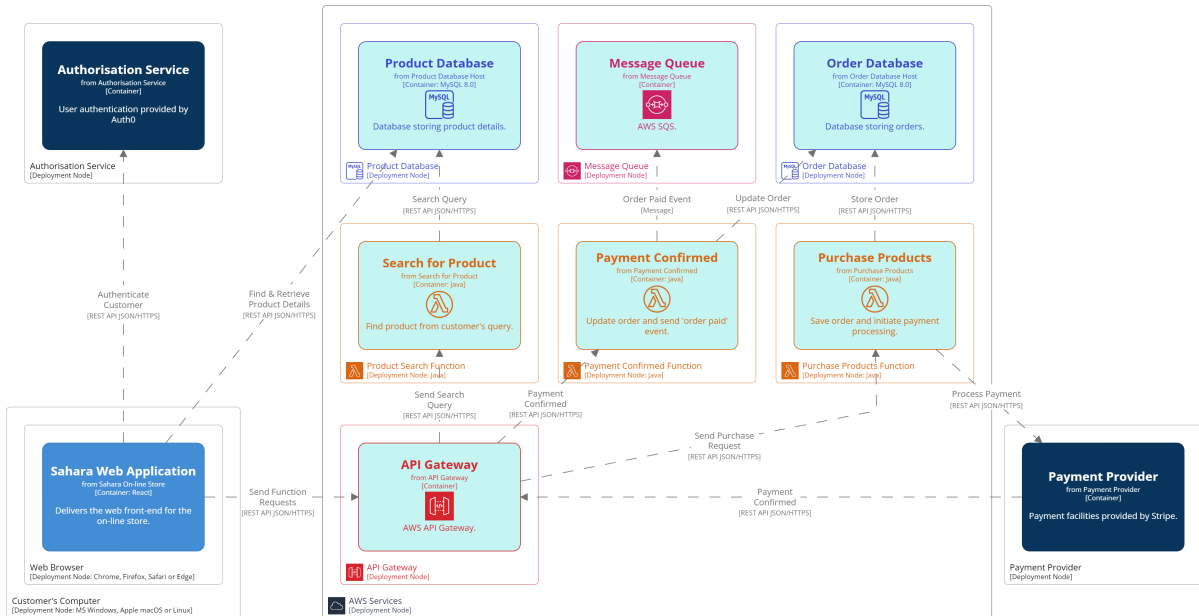
Definition 0. Serverless Architecture

Software system delivering functionality through BaaS or FaaS.

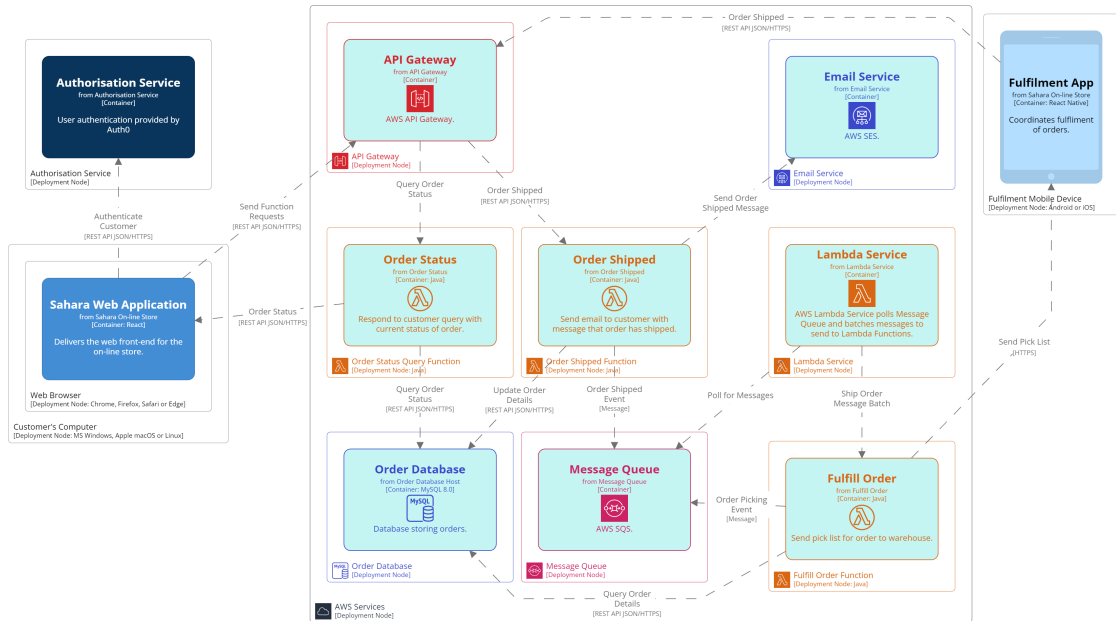
Sahara Browse & Order — Serverless



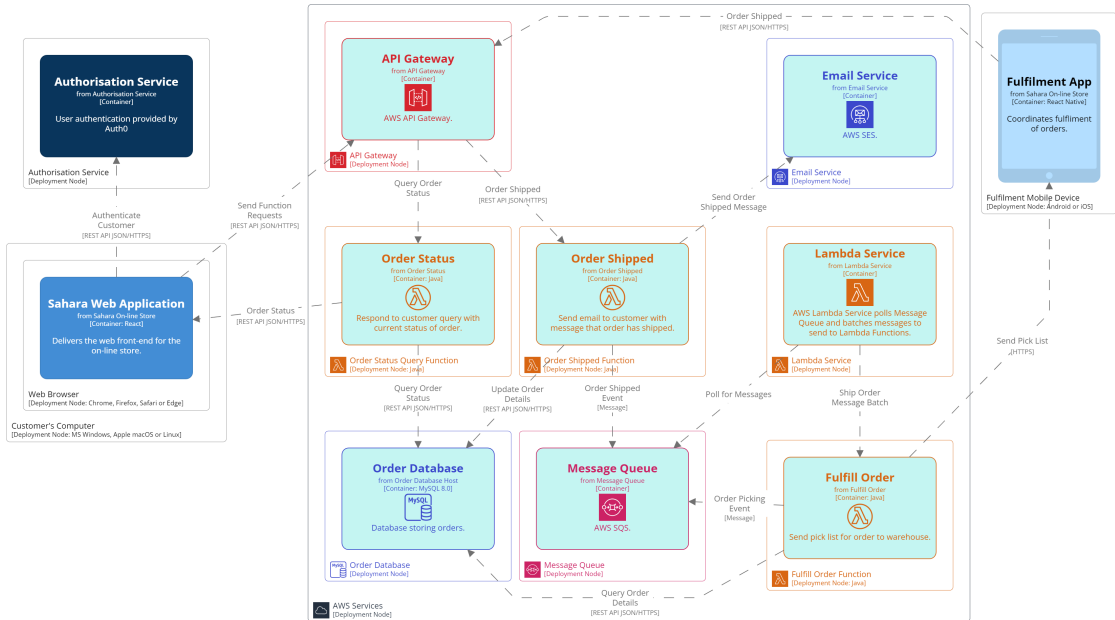
Sahara Browse & Order — Serverless



Sahara Fulfilment — Serverless



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- Automatic scaling
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- Reduced cost for dynamic loads
 - No server idle time
- Reduced server management
- Easier to run closer to client
 - Launch in same zone as client

BaaS Tradeoffs

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 - Duplication of logic with multiple front-ends
 - Web, mobile, ...

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 - Less modularisation
 - Duplication of logic with multiple front-ends
 - Web, mobile, ...
- No control over server optimisation

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- Startup latency
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- Proliferation of functions
 - Loss of encapsulation

Question

When is serverless appropriate?

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Answer

- Rich client apps with common backend
 - BaaS

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- Rich client apps with common backend
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- High latency processing
 - Within function duration constraints
- Apps with variable load
 - Take advantage of auto-scaling

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When is serverless *not* appropriate?

Answer

- Quick response required
 - Can't wait for FaaS to start
- Compute intensive processing
- Apps with steady load
 - Server-based approaches are cheaper

Self-Study Exercise

- Redesign your scalability assignment to be serverless.
 - What parts of your design would benefit from being serverless?
- Implement your revised design.

Pros & Cons

Extensibility



Reliability



Interoperability



Scalability



Deployability



Modularity



Testability



Maintainability



Security



Simplicity



References

[Brunko, 2019] Brunko, P. (2019).

Serverless architecture: When to use this approach and what benefits it gives.

<https://apiko.com/blog/serverless-architecture-benefits/>.