Serverless Architecture

Software Architecture

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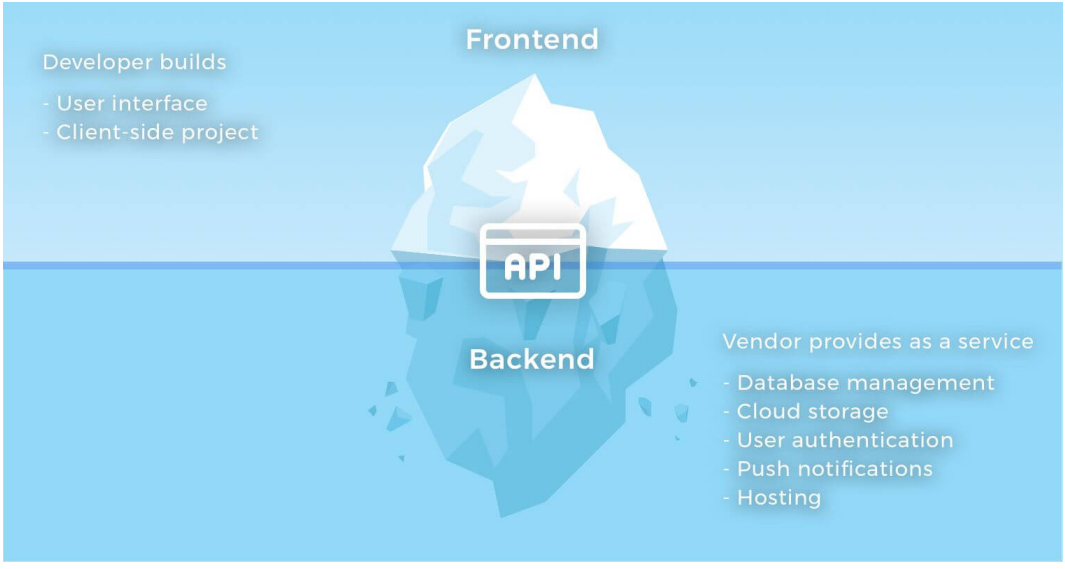
Oxymoron 1. Serverless

Logic running on someone else's server.

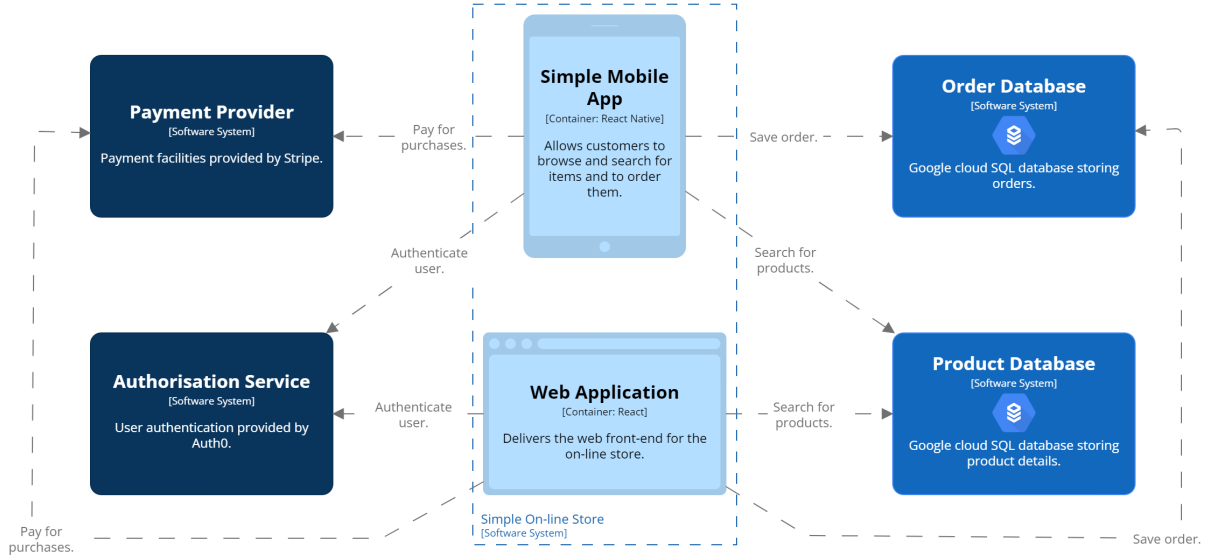
Definition 0. Backend as a Service (BaaS)

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.

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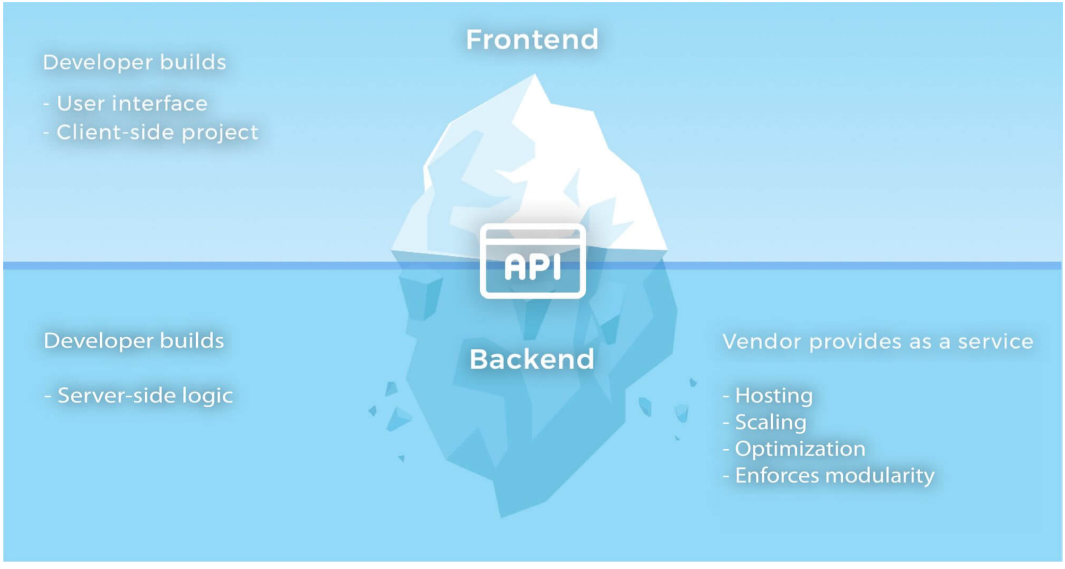

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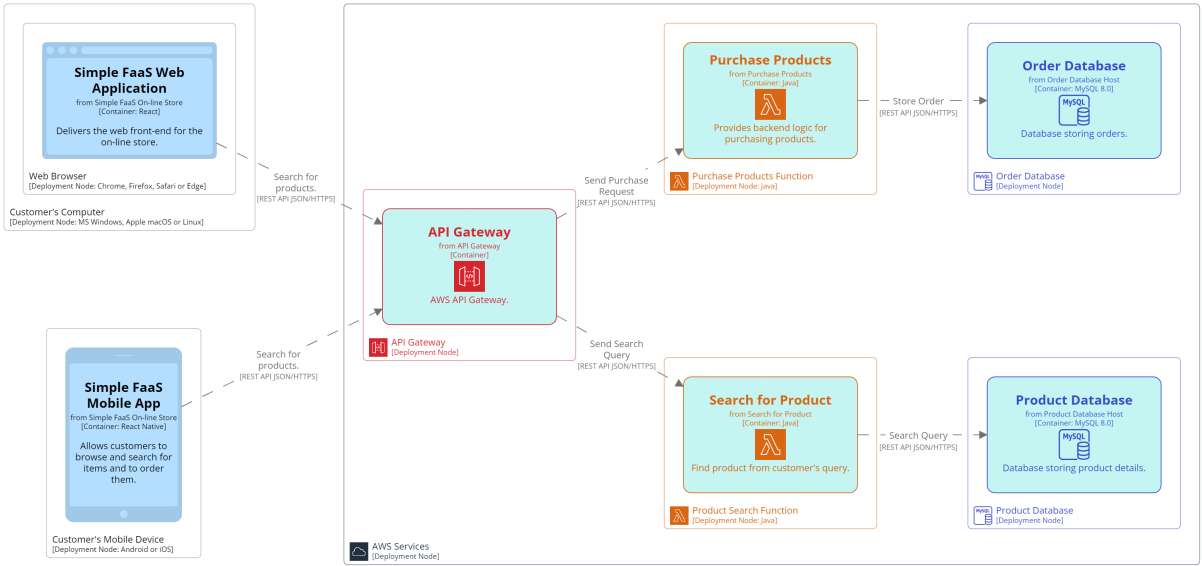
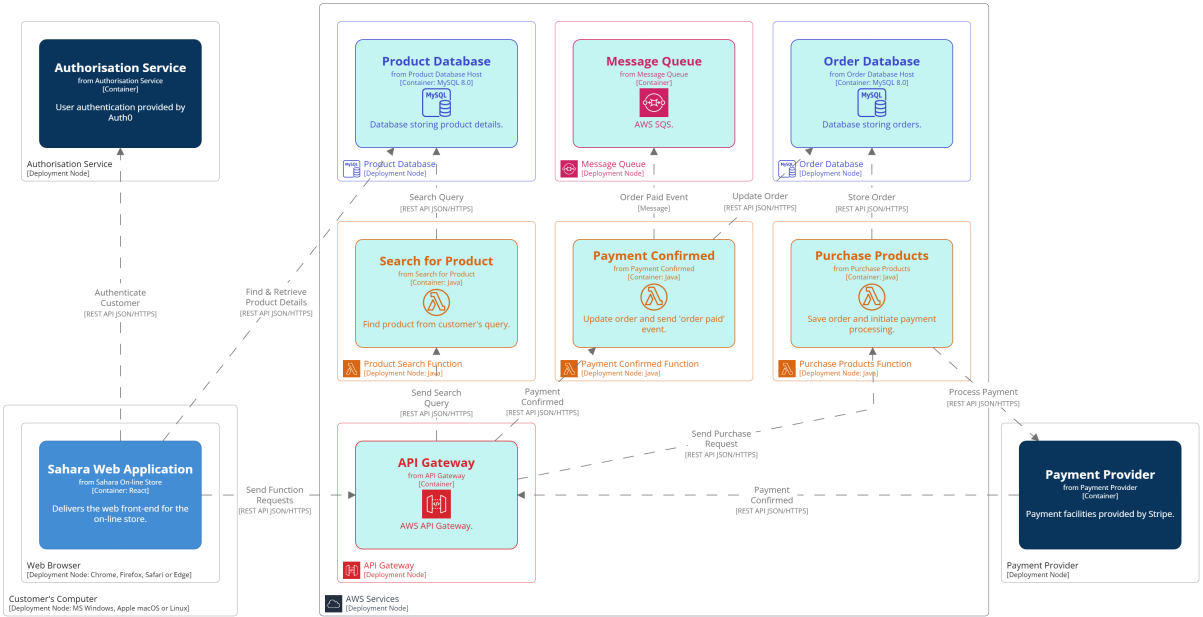


Definition 0. Serverless Architecture

Software system delivering functionality through BaaS or FaaS.

Sahara Browse & Order — Serverless



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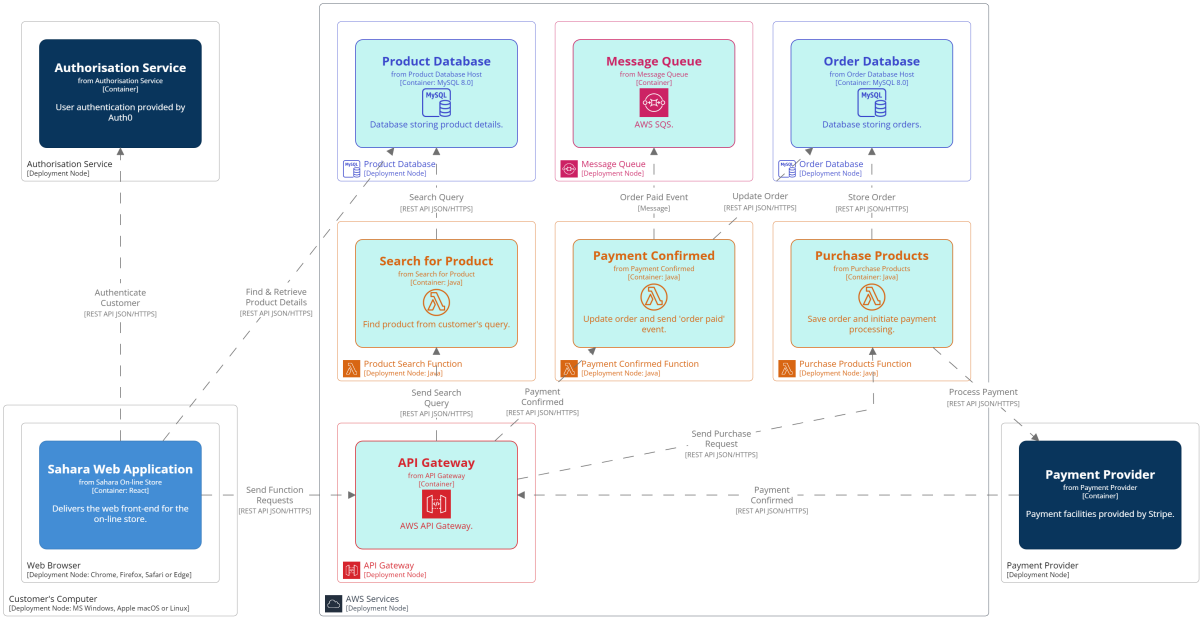
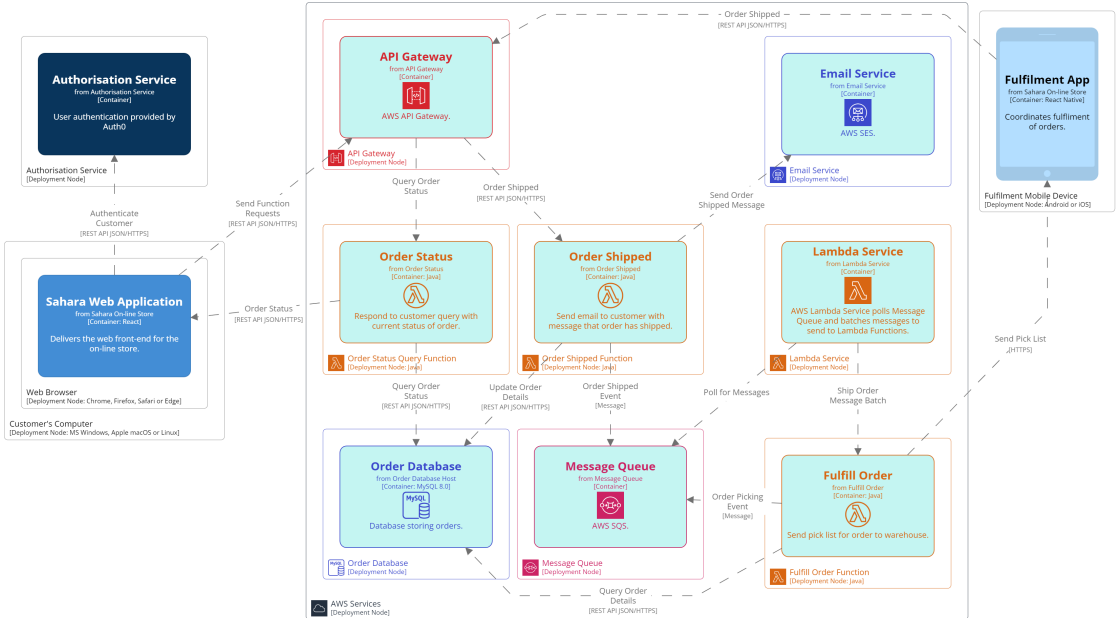


Sahara Fulfilment — Serverless



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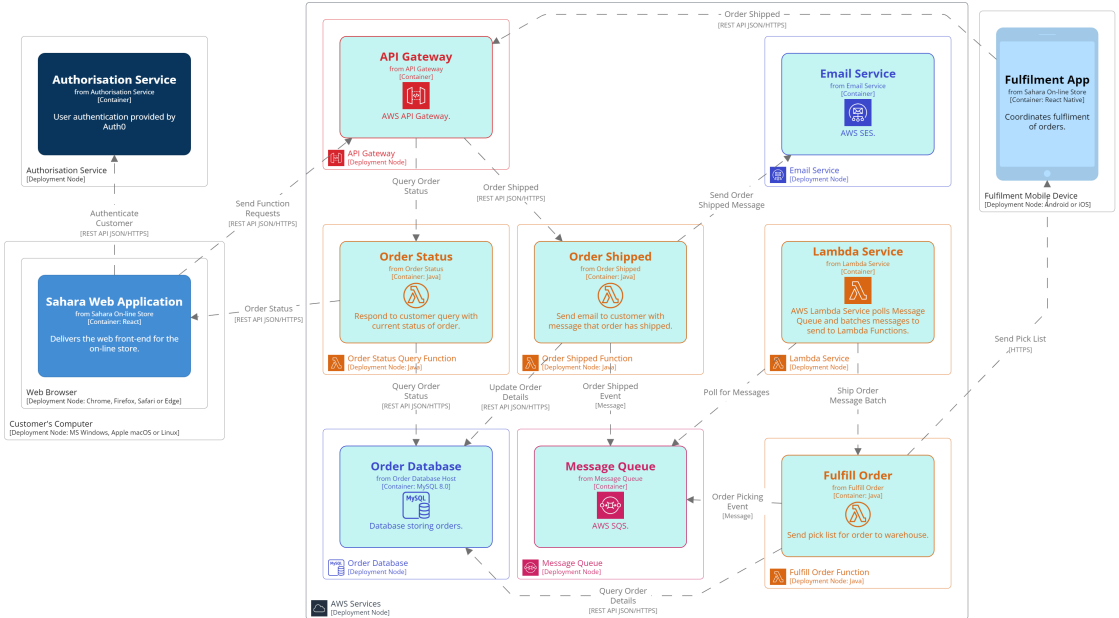

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- Reduced server management
- Easier to run closer to client
  - Launch in same zone as client

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- Front-end accesses database directly
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  - Duplication of logic with multiple front-ends
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- No control over server optimisation

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    - Some languages worse than others (e.g. Java)
- Proliferation of functions
  - Loss of encapsulation

Question

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- High latency processing
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- Apps with variable load
  - Take advantage of auto-scaling

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- Quick response required
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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/.