

Serverless Computing

What is Serverless?

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What is Serverless?





The data hall in Phase I of the QTS Chicago data center. (Photo: Rich Miller). <https://datacenterfrontier.com/qts-realty-brings-its-mega-scale-approach-to-chicago/>





There is NO CLOUD, just other people's computers

Cloud Clients

Web browser, mobile app, thin client, terminal emulator, ...



Application

SaaS

CRM, Email, virtual desktop, communication, games, ...

Platform

PaaS

Execution runtime, database, web server, development tools, ...

Infra-
structure

IaaS

Virtual machines, servers, storage, load balancers, network, ...

Serverless is...

- > *“Serverless doesn’t mean servers are no longer involved. It simply means that developers no longer have to think that much about them.” [1]*
- > Categorized in Backend as a Service “BaaS” & Function as a Service “FaaS” [2]



[1] <https://readwrite.com/2012/10/15/why-the-future-of-software-and-apps-is-serverless/>

[2] <https://martinfowler.com/articles/serverless.html>

Agenda

- > What is Serverless? ✓
- > Serverless Computing
- > Open Source Solutions
- > Hands on demo



Serverless Computing



Serverless - BaaS

- > Replace server side code with off-the-shelf services
- > Mainly used by mobile and single-page apps



Serverless - FaaS

- > New way of building and deploy server-side applications
- > Event-driven operations (functions)



Benefits of Serverless

- > Reduce costs of operations, risk and resources
- > No more over-provisioning
- > Increased flexibility of scaling
- > Shorter lead time



Limitations of Serverless

- > Complex state management
- > Communication and cold starts latency
- > Local testing
- > Loss of control
- > Vendor lock-in
- > Immaturity of services and tooling

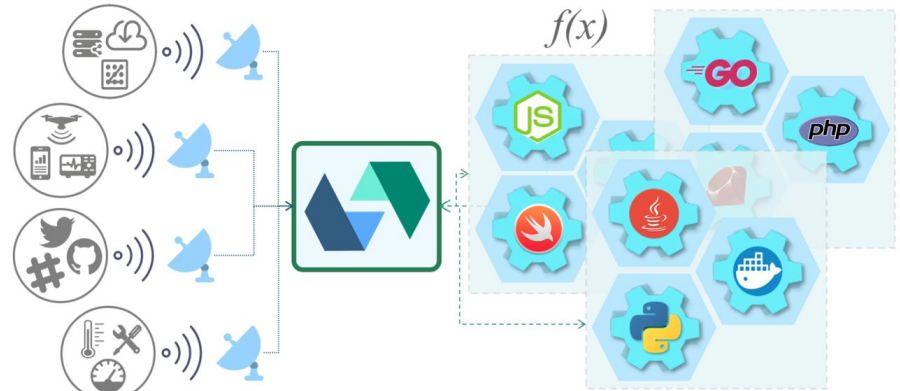


Open Source Solutions



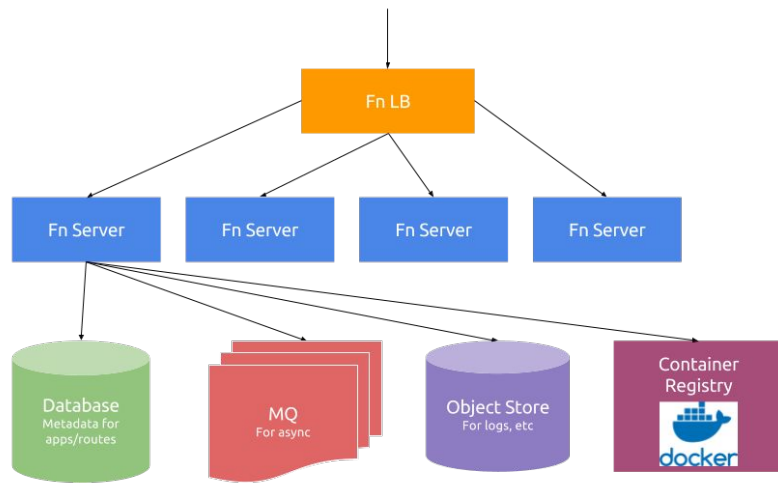
Apache OpenWhisk

- > Open-source distributed platform
- > $f(x)$ in response to events
- > Run on Docker containers
- > Support multiple languages
- > Integrate with popular services
- > Functions compositions
- > Backed by IBM



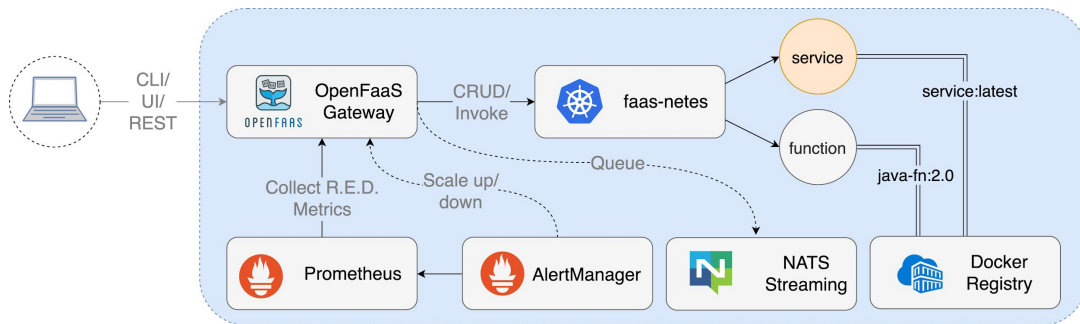
Fn Project

- > Open-source FaaS platform
- > Event-driven *Fn*
- > Run on Docker containers
- > Support multiple languages
- > Functions orchestration
- > Backed by Oracle



OpenFaaS

- > Serverless functions
- > Event-driven functions
- > Run on Docker containers
- > Support multiple languages
- > Backed by VMWare



Demo



Links

- > AWS - <https://aws.amazon.com/>
- > Microsoft Azure - <https://azure.microsoft.com/>
- > Google Cloud - <https://cloud.google.com/>
- > IBM Cloud - <https://www.ibm.com/cloud>
- > Oracle Cloud - <https://www.oracle.com/cloud/>

- > Apache OpenWhisk - <https://openwhisk.apache.org/>
- > Fn Project - <https://fnproject.io/>
- > OpenFaaS - <https://www.openfaas.com/>

- > Demo - https://github.com/oscarcosta/serverless_demo

