

# Serverless Java in Action



**VOXXED DAYS**  
BANFF  
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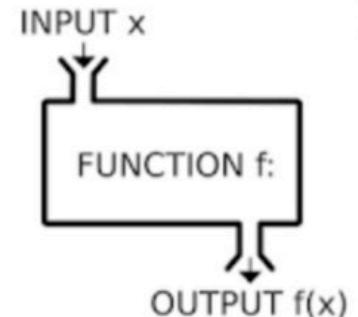
# Belgium



# Function as a Service

In mathematics, a **function** is a relation between a set of inputs and a set of permissible outputs with the property that each input is related to exactly one output. An example is the **function** that relates each real number  $x$  to its square  $x^2$ .

[Function \(mathematics\) - Wikipedia](https://en.wikipedia.org/wiki/Function_(mathematics))  
[https://en.wikipedia.org/wiki/Function\\_\(mathematics\)](https://en.wikipedia.org/wiki/Function_(mathematics))



- **Function**
  - Small bits of code with a well defined job
  - Easy to understand and maintain
- **As a Service**
  - The system takes care of provisioning, scaling, patching, ...
  - Each function can scale independently

# Serverless (Servers)

“ ‘*Serverless*’ is just a name.  
We could have called it ‘*Jeff*’ ”

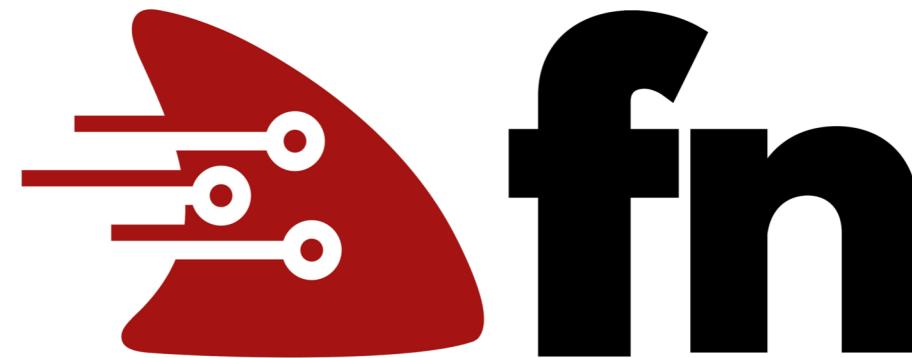
- Paul Johnston

<https://serverless.zone/serverless-is-just-a-name-we-could-have-called-it-jeff-1958dd4c63d7>

# Why Serverless?

- No Server Management
- Automatic Scaling
- Only pay for what you use
- Agility

# Introducing Fn Project



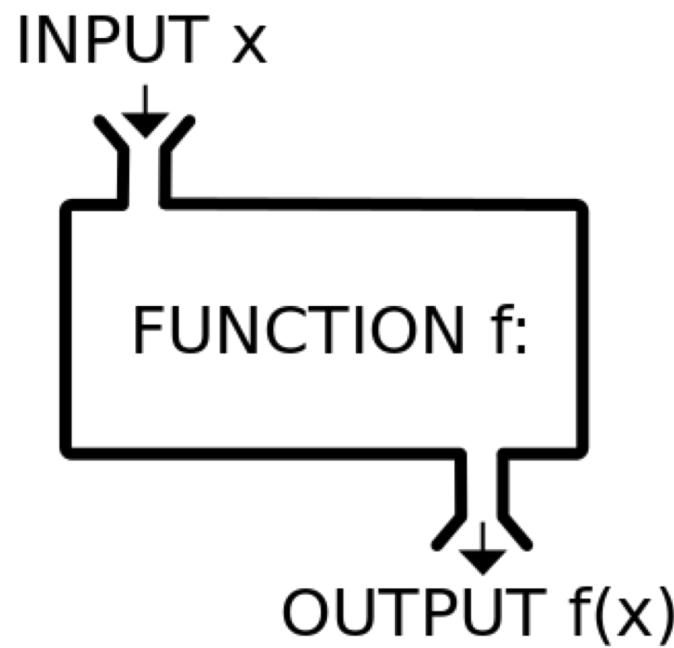
Open Source Container Native FaaS Platform

<https://github.com/fnproject>

# Introducing Fn Project

<b>Open Source</b>	No lock-in
<b>Approachable</b>	Easy for new users More controls for advanced users
<b>Container based</b>	Leverage Docker
<b>Platform independent</b>	Cloud, On-Perm, laptop
<b>Language independent</b>	Go, Java, Python, ...
<b>Scheduler independent</b>	K8S, ...

# Introducing Fn Function



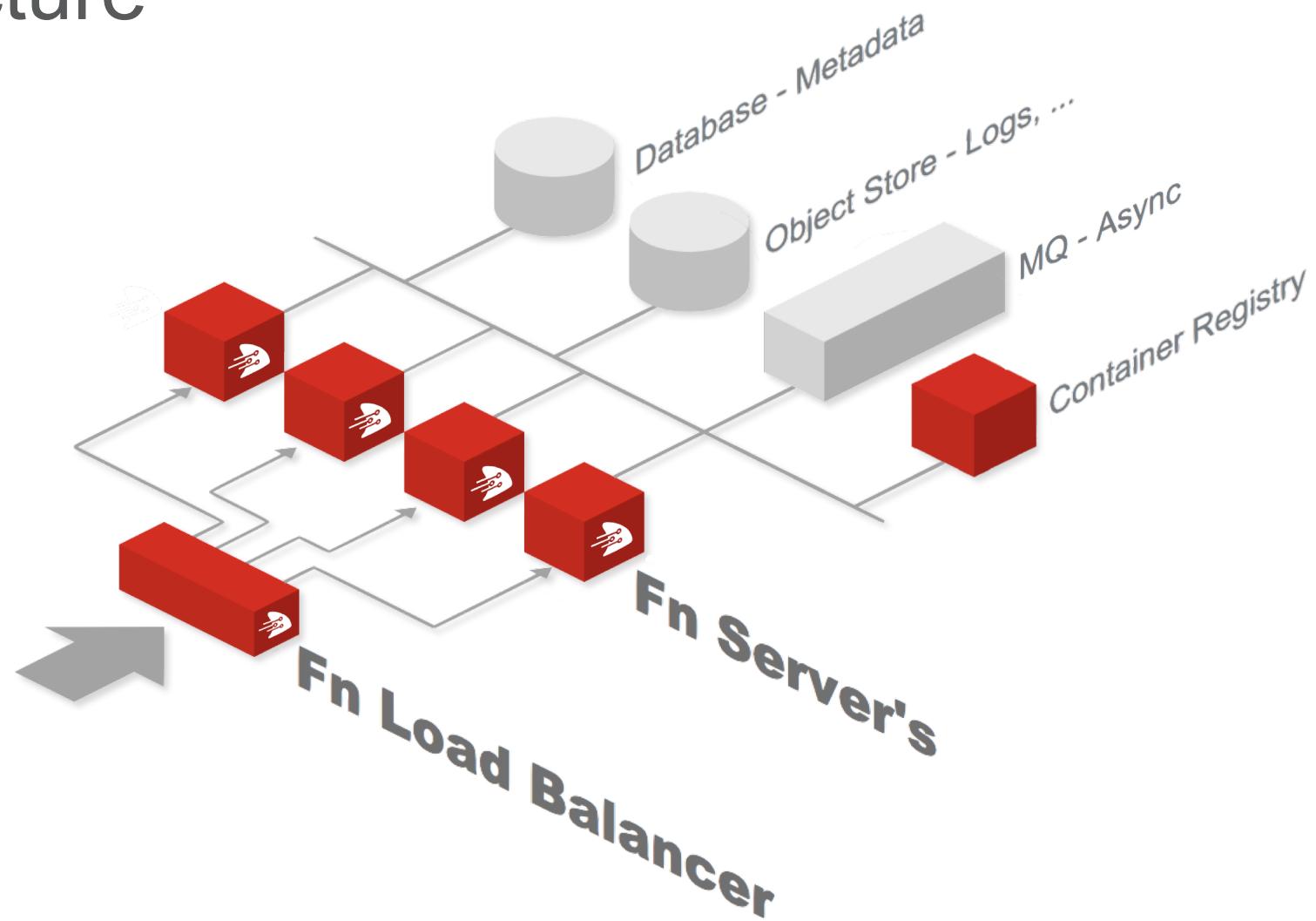
Code wrapped in a **Container Image**

- Input from *stdin*
- Output to *stdout*
- Logs to *stderr*
- Or simply use an **FDK!**

**Fn** handles everything else!

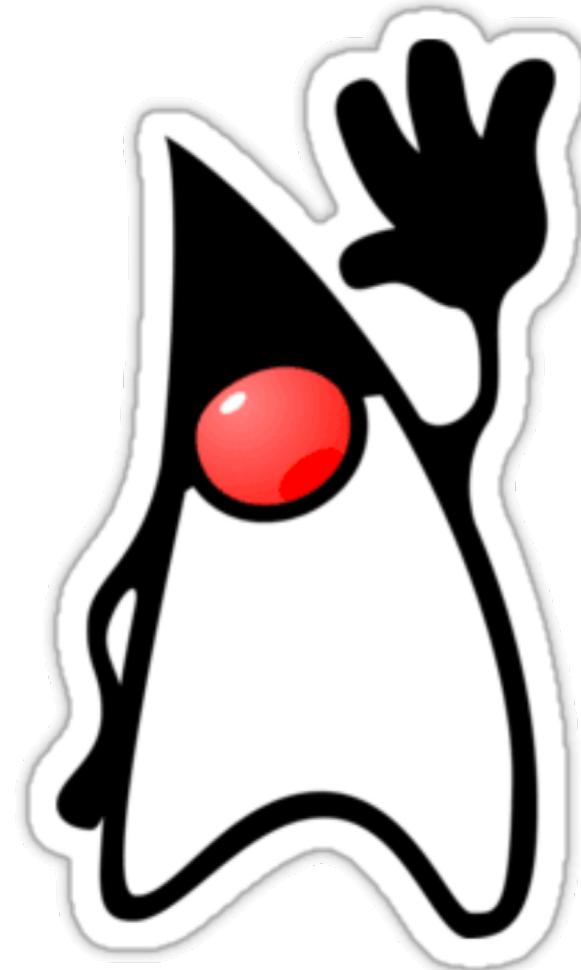
# Fn Architecture

- Fn CLI
- Fn FDK's



Fn

Awesome Java support



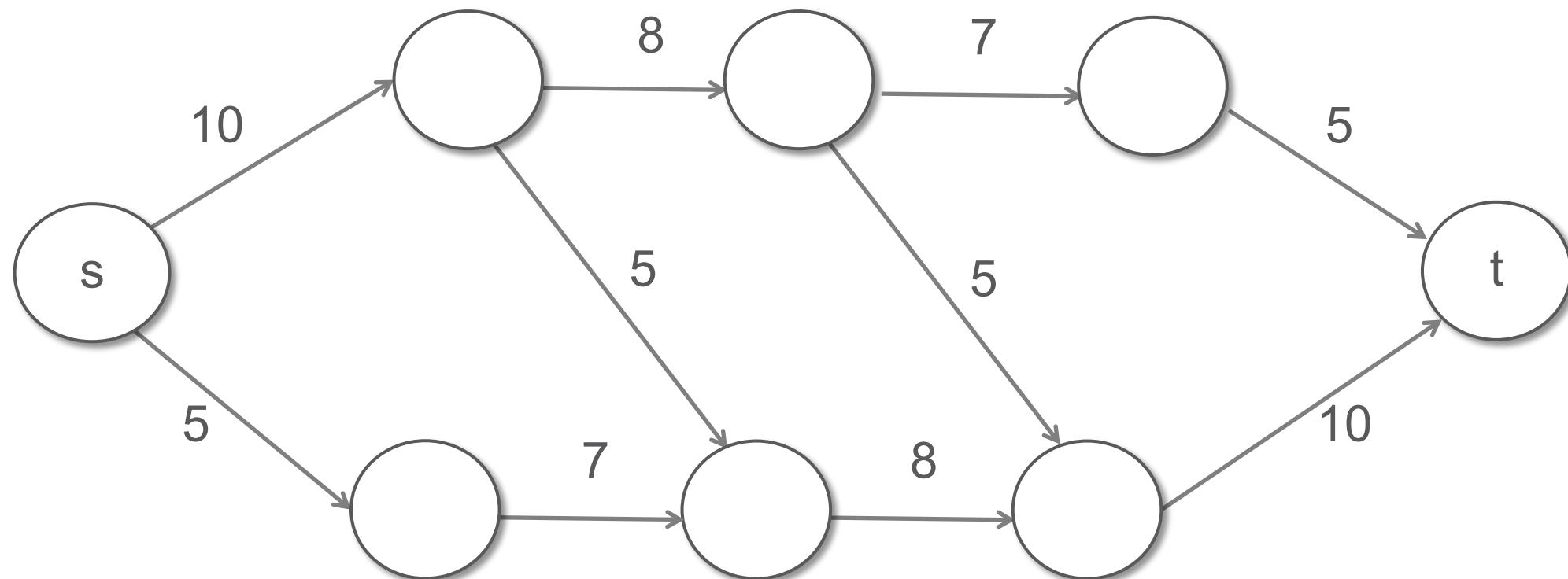
# Fn

## **... not just Java**

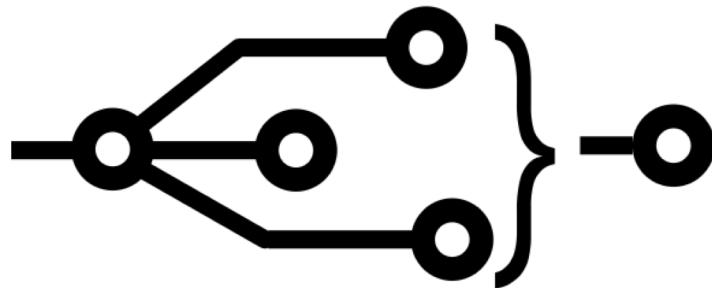
- Go
- Python
- JS
- Ruby
- ...

# Serverless

## Permanent Storage Lives Elsewhere



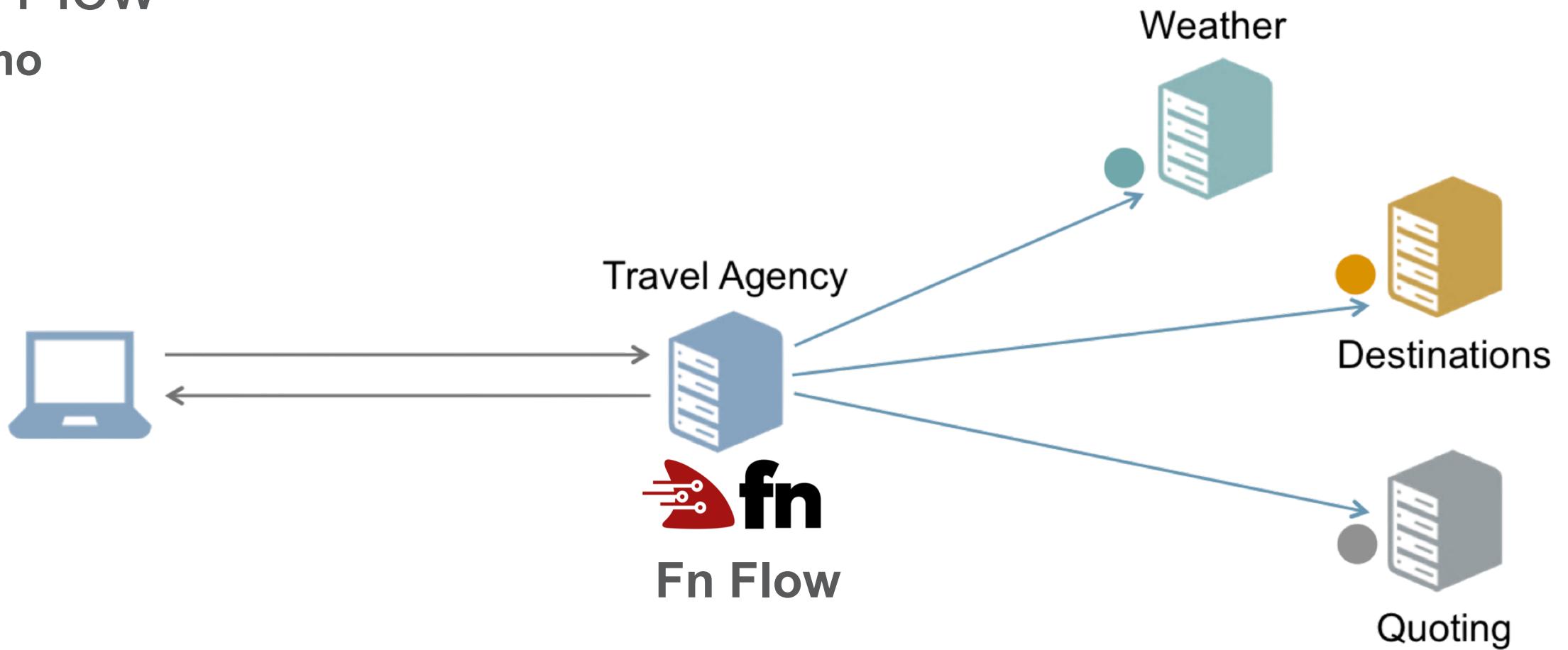
# Fn Flow



- For long-running, reliable, scalable functions with primitives for fork-join, chaining, delays and error handling
- Java support based on Java 8 **CompletableFuture** API
- Go, Node and Python support on the way!

# Fn Flow

## Demo



# Rapid Ecosystem Evolution...

- Java release cadence
- JVM based languages
  - Kotlin, Groovy, etc.
- “*JVM-less*”
  - E.g. Substrate VM
- ...
- Fn init-image

# Fn

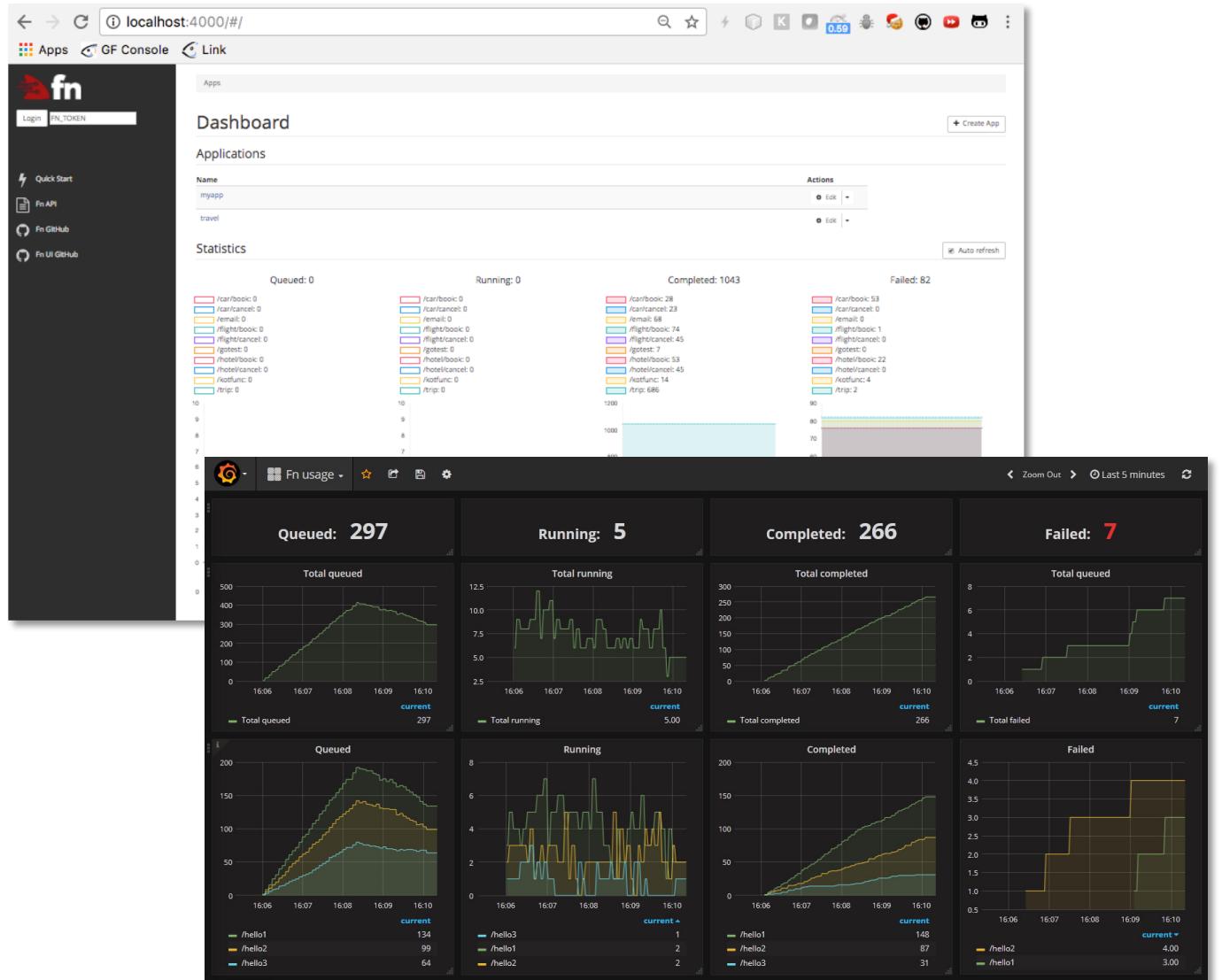
## And more...

- Spring Cloud Function support
- Serverless Framework support
- JAX-RS support
- CNCF CloudEvents support
- Hot – Frozen – Cold Functions
- Helm Chart for K8S
- Async Functions (\*)

# Fn

## Monitoring & Management

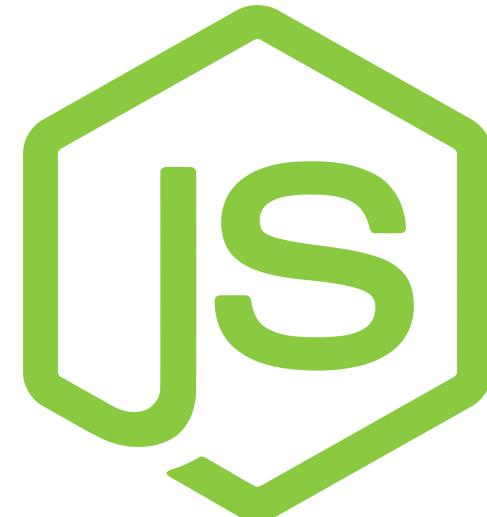
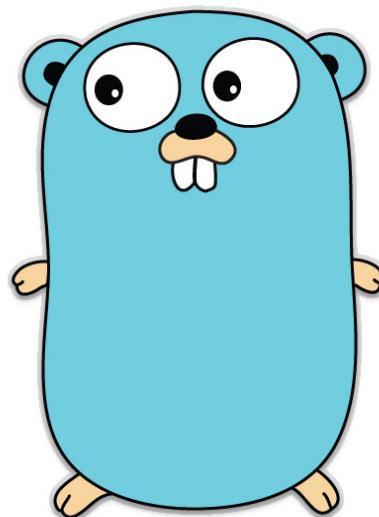
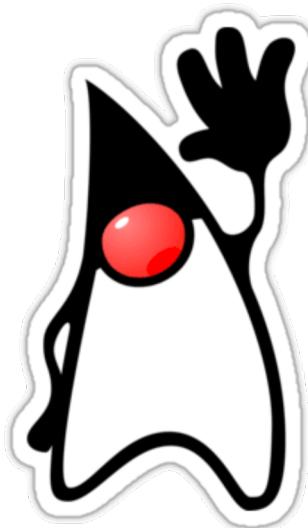
- OpenTracing support
- Pluggable backend
  - Prometheus Metrics Sets
    - Function counts
    - Operation durations
    - Docker metrics
- Logging via syslog
- Fn CLI
- Fn Dashboard



# Fn

## Recap

- Container Native, Cloud Agnostic, Polyglot, Open Source FaaS Platform
- Init, Test, Deploy, Invoke and Scale



# Fn - An Ideal Functions Platform

- **Platform Independent** - laptop, server, cloud
- **Scheduler Independent** - deploy to Kubernetes, Swarm, etc.
- **Docker Based** - leverage Docker ecosystem
- **Open Source** - no vendor lock-in
- **Approachable** - easy for new users, low level controls for advanced users

<https://github.com/fnproject/>

# Thanks!

# Fn

## Resources

- <https://github.com/fnproject/>
- <https://fnproject.slack.com/messages>
- <http://fnproject.io>
- <https://medium.com/fnproject/>
- <https://twitter.com/fnproject>

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