Hálózatba kapcsolt erőforrás platformok és alkalmazásaik

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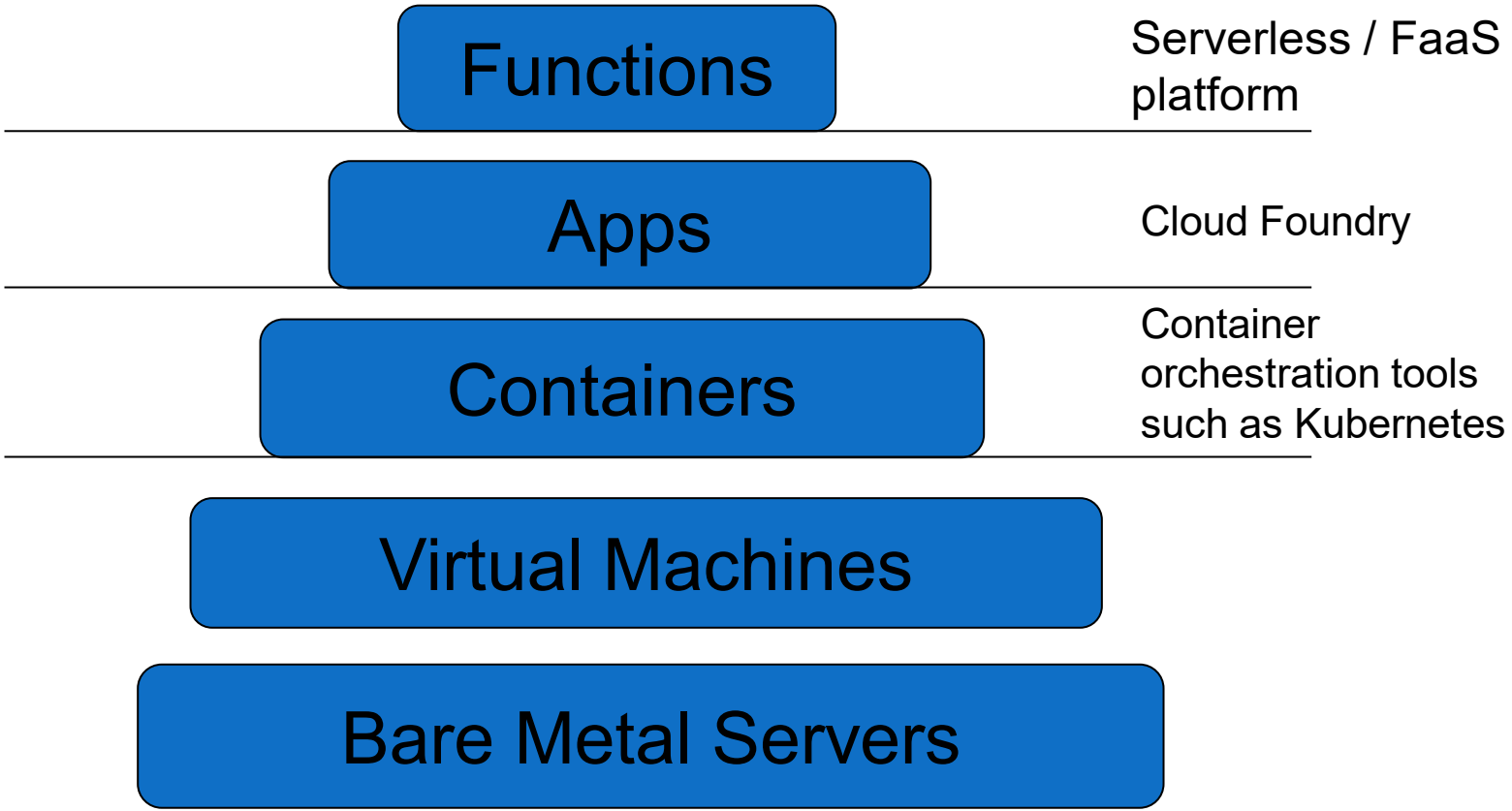
What is a function?

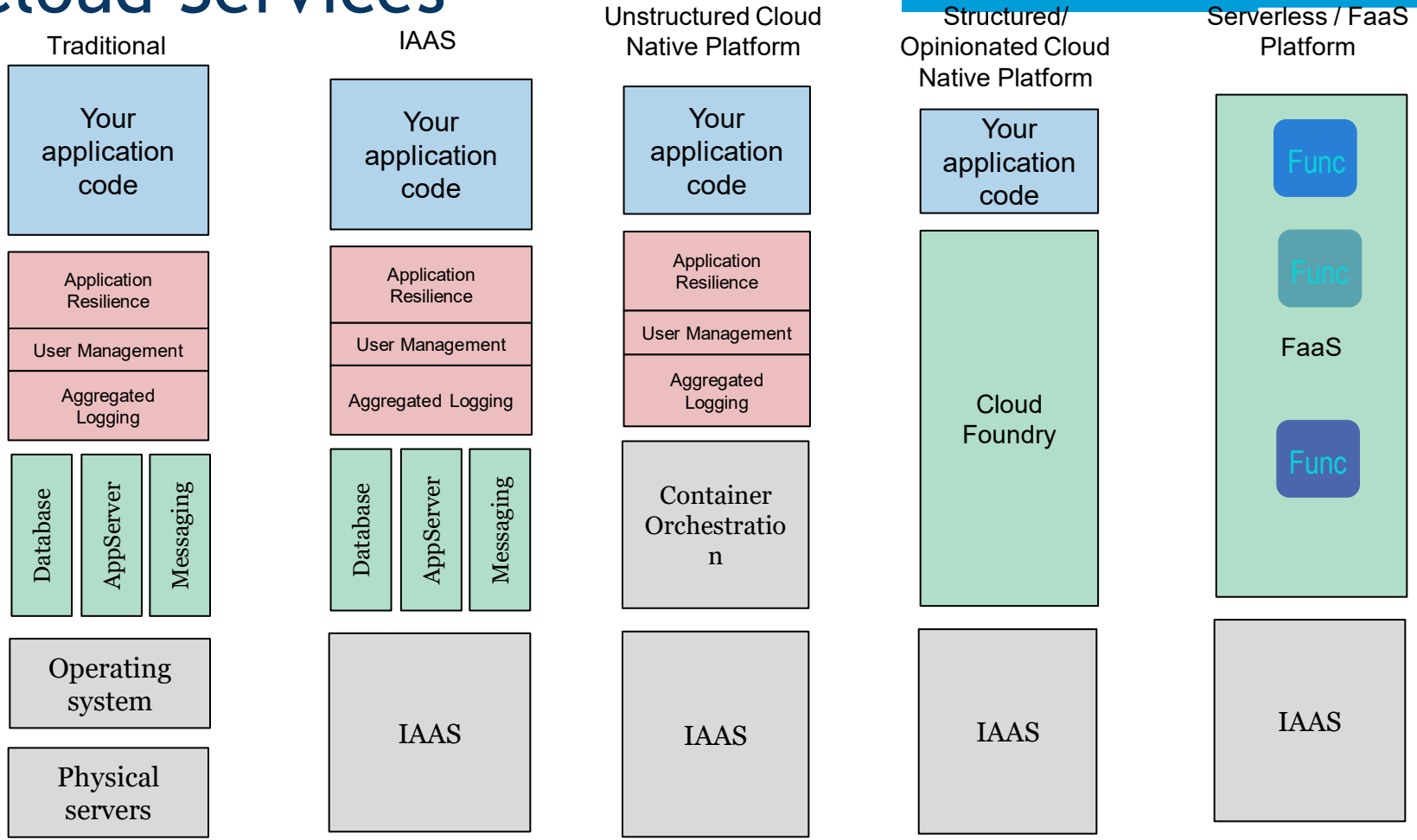
Input: “what time is it?”

Output: “10:10 AM”

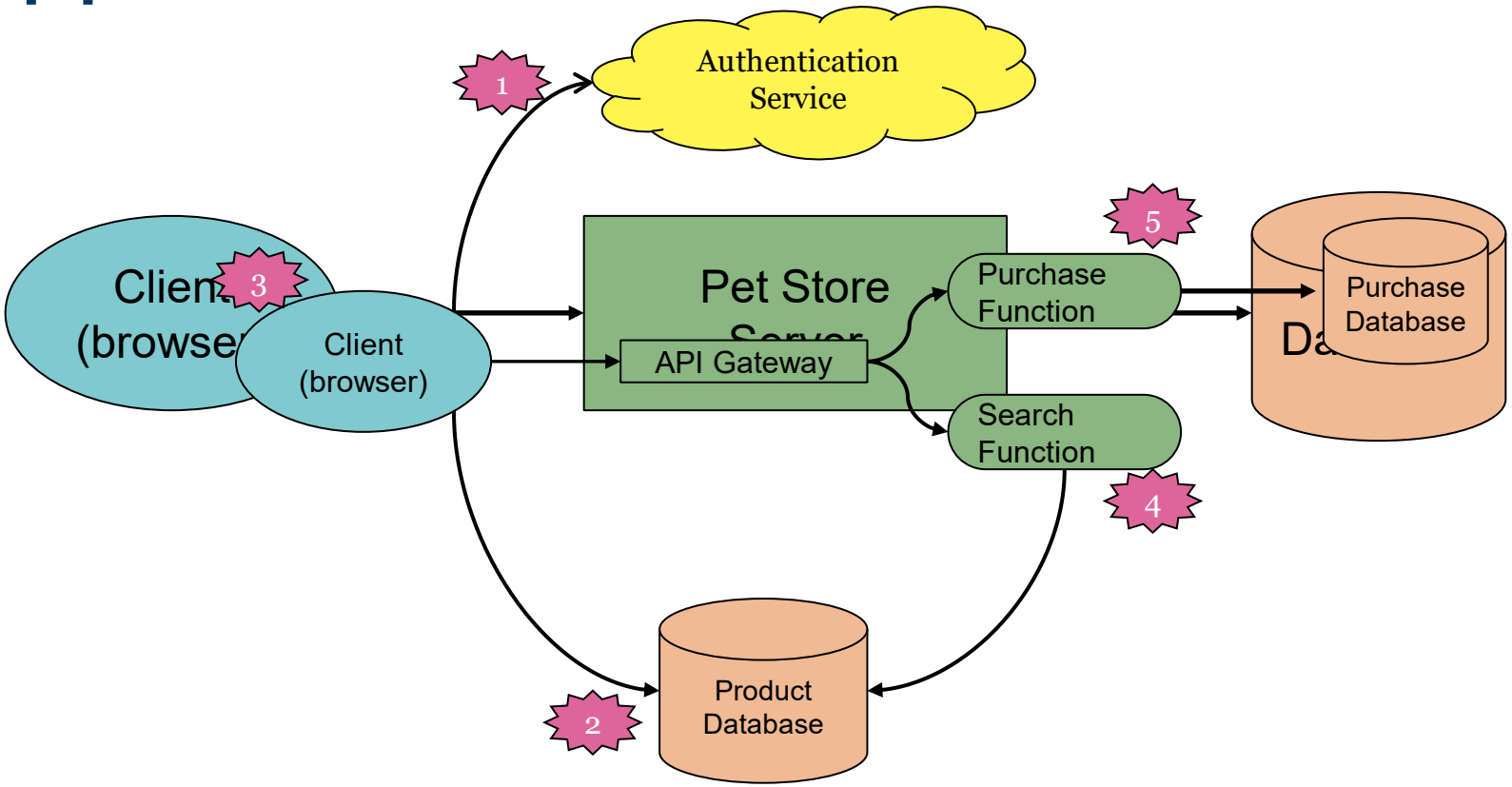
Cloud Abstractions



Cloud Services



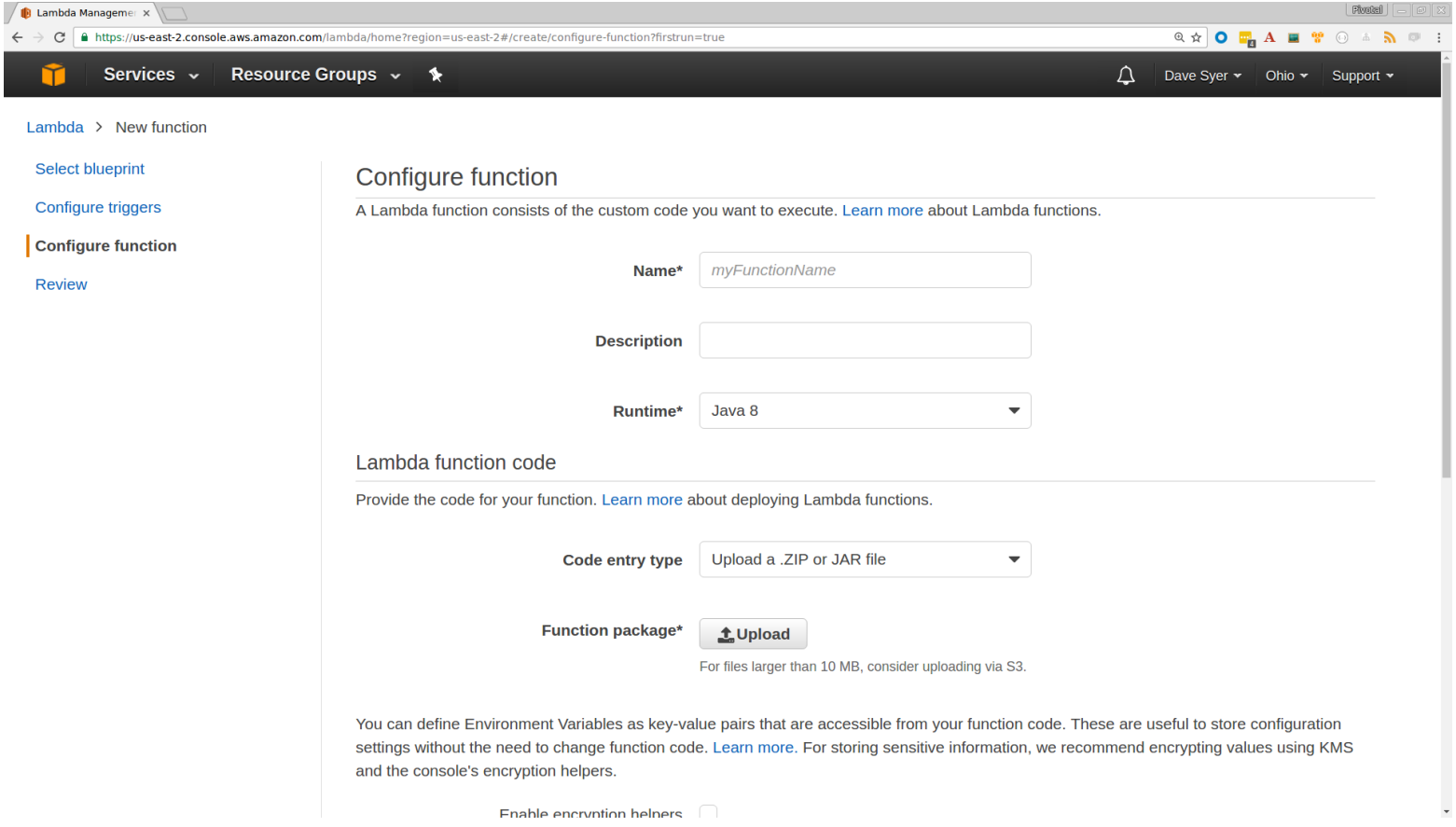
Applications -> Functions



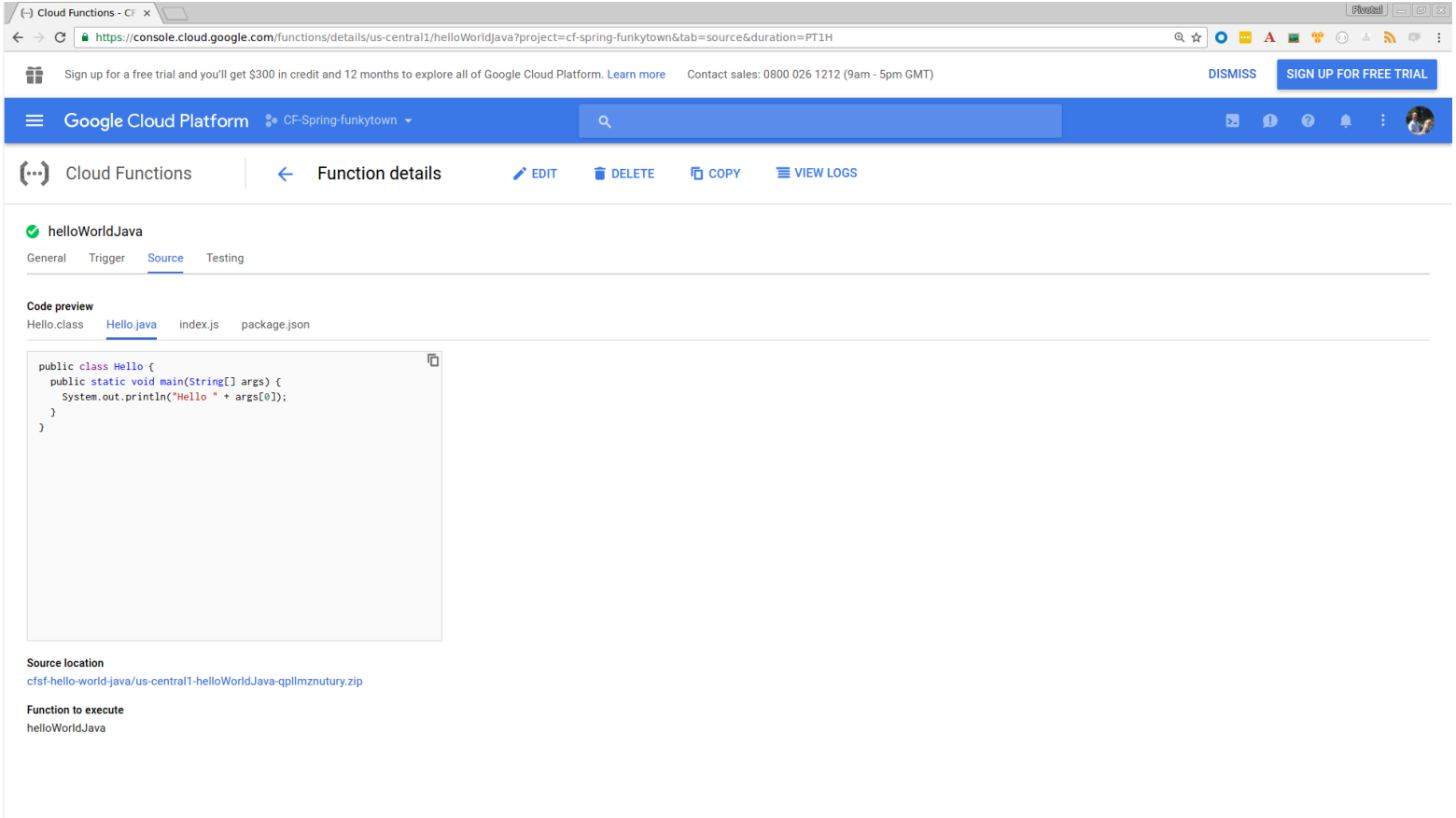
Characteristics of Serverless / FaaS

- Focus on business logic
- Event driven
- Short lived
- Stateless
- Auto scaling and auto deployment
- Billing per execution
- Prototypes become production code really quickly

Amazon Lambda



Google Cloud Function



Serverless Providers

- (J) Amazon Lambda
- Google Cloud Functions
- Azure Function
- (J) Apache OpenWhisk
- Fission
- Kubeless
- ...

(J) = native Java support

Others can run Java via node JRE launcher.

Multple language support:
- NodeJS
- Python
- Java
- Scala
- Clojure
- …

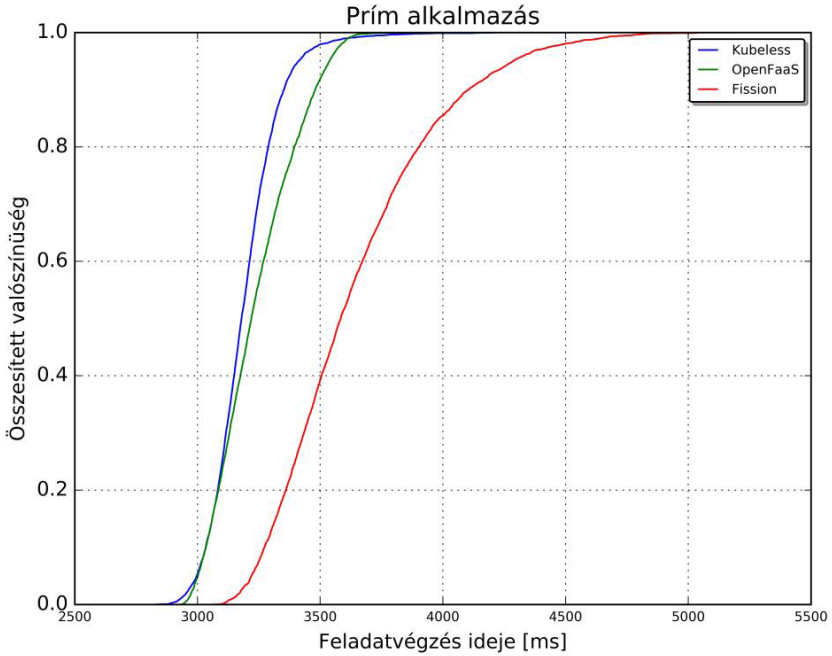
Problems/concerns

- **New architectural style.** The serverless style of truly stateless, mostly asynchronous, horizontally scaled apps takes 12-factor to the extreme. It's a positive trend, but one that is not natural for many developers today.
- **IaaS lock-in.** Serverless platforms today are cloud only, and not portable between vendors. Also, while the serverless code itself is portable, the unique connectors/services/triggers in each cloud make migration a challenge.
- **Immature tooling for development.** Substandard tools available today for IDE integration, tests, continuous integration.
- **Immature tooling for "day 2."** As expected for new tools and new paradigms, the support tooling is fairly sparse. Monitoring, logging, debugging, tracing, and versioning tools are fairly weak.

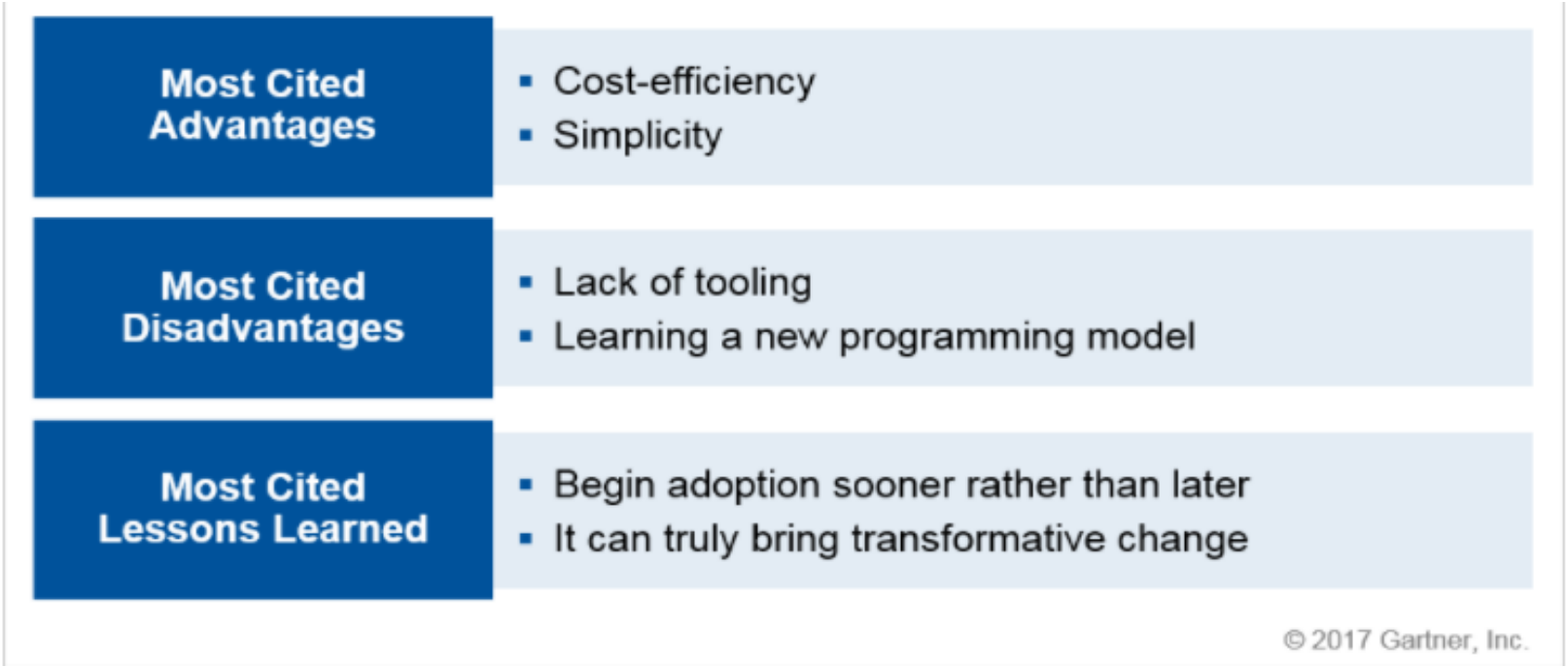
Challenges of Serverless / FaaS

- New architectural style
- Management of large populations of functions
- Vendor lock-in
- Execution duration limit
- Start up latency
- Network latency among functions
- Immature tooling for development
- Immature tooling for Day 2

The problem of FaaS: eventually high response times



Gartner’s case studies



Is serverless a real game changer or just the latest fad?

Gartner's answer

"The years 2017 and 2018 should reveal whether serverless computing will fall into the Trough of Disillusionment to be counted as just another overhyped alternative, or if it emerges quickly as a real step forward in cloud application architecture."

Gartner’s strategic planning assumption

“By 2022, over 50% of cloud-based software offerings will incorporate some form of serverless technology (function platform as a service [fPaaS], database as a service [DBaaS], object storage, and so on), up from less than 10% in 2017."

Next Steps

- More toolings, patterns and platform improvements
- Mindset changes on software design
- Validations and justifications to adopt serverless technology

Links

- Spring Cloud Function: https://github.com/spring-cloud/spring-cloud-function
- Fission: http://fission.io/
- 12 factor: https://12factor.net/
- Spring Initializr: http://start.spring.io
- Spring Cloud: http://cloud.spring.io
- Reactor: http://projectreactor.io

Kubeless

- kubeless.io
- https://github.com/kubeless/kubeless

Open Source , non-affiliated

- https://github.com/kubeless

- Kubernetes extension
- TPR (CRD) for `functions`
- A controller
- Creates deployments, services
- Creates Ingress if needed
- Uses Configmap, Init container for now
- Instrumented runtimes with `prometheus-client`
- A cute UI
- A `serverless` Plugin
- Custom metrics HPA coming ...

Application types

- Event based distributed apps
- Composed of many different services triggered by events
- AWS Lambda Clone
- Google Cloud functions like CLI
- Same realm as OpenWhisk, Fission ...

Serverless deployment framework

Today in Serverless 1.20 we now have kubeless support:

20k stars, the *go to* framework to deploy/managed serverless functions on lambda, Azure, GCF, OpenWhisk.

```
sls create --template kubeless-python --path mypythonfunction
```

```
sls create --template kubeless-nodejs --path mynodefunction
```

- https://serverless.com

Scripting the fn deployment process

Open handler.py and add this function

```
def test():
    list_element = [1,5,8,12,78,12]
    for i in range(len(list_element)):
        print list_element[i]
```

→

```
service: test

provider:
  name: kubeless
  runtime: python2.7

plugins:
  - serverless-kubeless

(The above one is the plugin name as I am using serverless-kubeless plugin)

functions:
  test:
  description: 'print the array'
  handler: handler.test
```

→ serverless deploy

https://www.opcito.com/go-serverless-with-kubeless/