



Serverless with Apache OpenWhisk



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Agenda

- > What is **OpenWhisk**?
- > What is **IBM Cloud Function**?
- > **History**
- > **Key Features and Components in OpenWhisk**
- > **Use Case**
- > **Languages Supported in OpenWhisk to write Actions**
- > **Advantages and disadvantages**
- > **Pricing**
- > **CLI and API**
- > **Demo**
- > **References**



What is OpenWhisk? IBM Cloud Function?

> Apache OpenWhisk:

- Open source
- Serverless Computing Framework
- Easier to provisioning
- **Focus** on **coding** and **functionality** rather than how to expose the functionality.
- **Cloud native**
- **Event Driven**
- Focused on **Stateless action Concept**

What is IBM Cloud Function?

- > **IBM Cloud Function:**
 - IBM **serverless cloud** env.
 - **Based on Apache OpenWhisk.**

History

> Who?

- Apache open source project

> Why?

- Make it easier for developers
- Event-based
- Cloud native open source environment

> How?

- Based on cloud native and 12 factors
- Few Key components (Next slide)

Key Components

- > Events
- > Action
- > Trigger
- > Rules

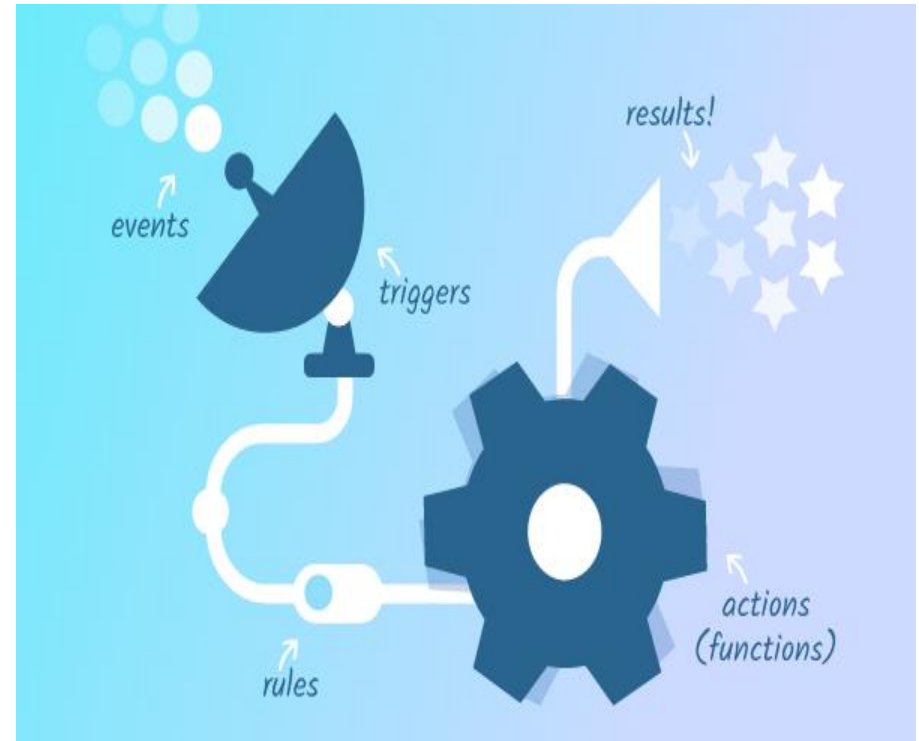


Figure 1: Apache OpenWhisk website:
<https://openwhisk.apache.org/> 05/20/2018

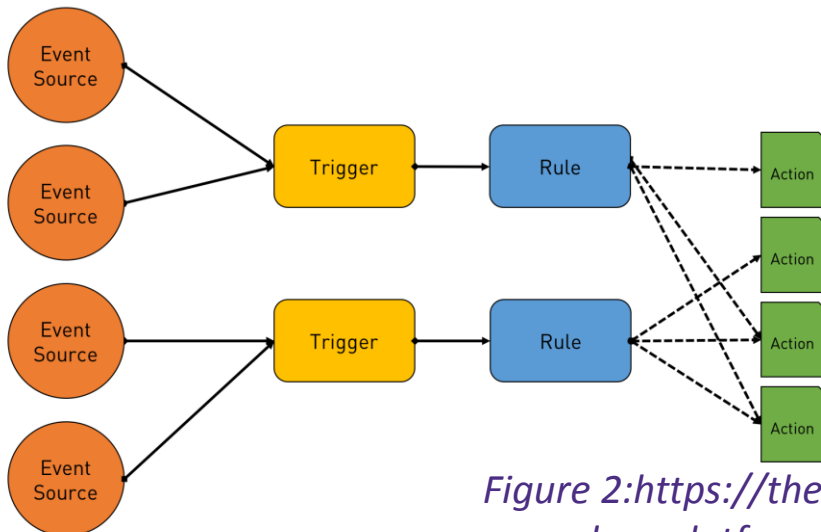


Figure 2: <https://thenewstack.io/behind-scenes-apache-openwhisk-serverless-platform/> accessed 05/19/2018

Use Case

- > **There is a RSS feed triggers to enable an action every time new feed is coming, action can capture the URL, sent it to somewhere or log it in S3 or Redis or memCache, and also send a text/email or a message into a slack channel as notification.**

Advantages and Disadvantages

> Advantage:

- Light weight
- Fast to develop a deploy
- Packaging concept (combining Actions under one namespace) `P.with(Mp).a.with(Ma).invoke(P)`
- Externally driven Events listener
- Open Source (Build it locally!)

> Disadvantage:

- Not a solution for everything
- Still evolving
- Open source (Complex!)
 - > Starting without IBM Cloud will be Challenging

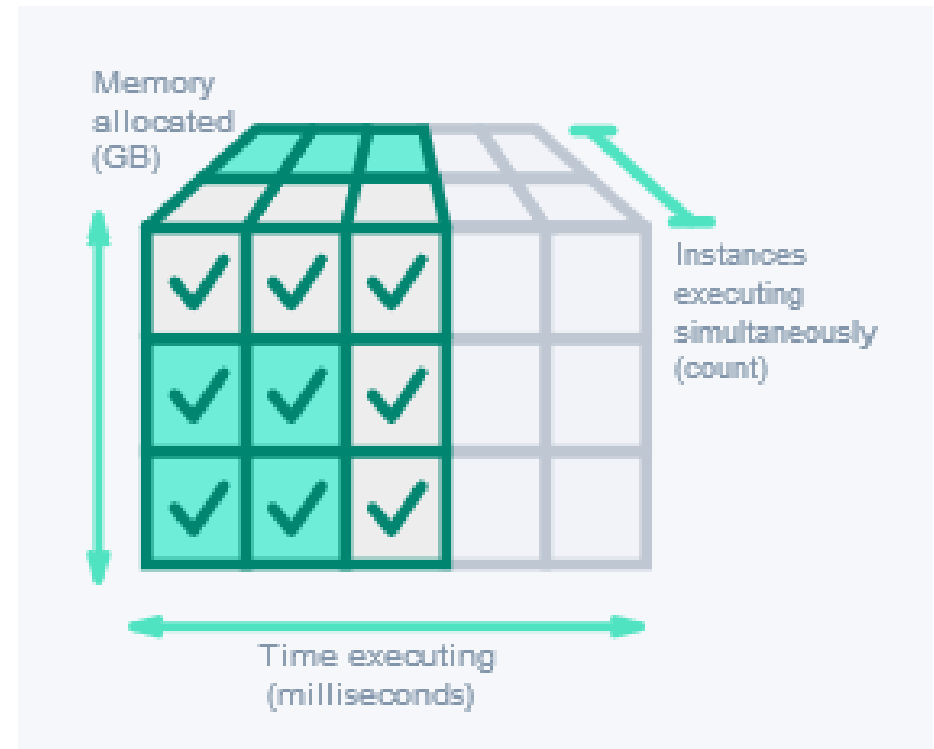
Languages Supported in OpenWhisk to write Actions

Currently, ...

- > **JavaScript**
- > **Swift**
- > **Python**
- > **PHP** function
- > **a Java** method
- > any binary-compatible executable including **Go programs**
- > run any custom code put in a **Docker container**.

IBM Cloud Function for OpenWhisk Pricing

- > **Basic Cloud Functions Rate:**
 - \$0.000017 per second of execution, per GB of memory allocated
- > **API Gateway Rate:**
 - Free/No Limits



Pricing (Cont.) – Cost Example

> Below is showing how much I would be charged for my actions.

Pricing Calculator

Basic Rate \$0.000017 GB-s

Avg. Execution Time (in ms) 60

Action Memory (in MB) 256

Executions Per Month 5000

Include Free Tier: (400,000 GB-s free)

Cost Per Month \$0.00

Examples

The table below highlights how your action configurations, along with usage, can impact your overall free tier and monthly cost.

ACTION EXECUTION TIME	ACTION MEMORY	EXECUTIONS PER MONTH	COST PER MONTH
500ms	128MB	5,000,000	Free
500ms	256MB	5,000,000	\$3.83
500ms	512MB	5,000,000	\$14.45
1,000ms	128MB	10,000,000	\$14.45
1,000ms	256MB	10,000,000	\$35.70
1,000ms	512MB	10,000,000	\$78.20

Communicate with OpenWhisk/ Bluemix

> Using **CLI**

- Using **IBM Bluemix** command line tool
- **Bx** wsk **action** create <myActionName>
 <actionFile>

> Using **API**

- **Create end points**
- Web Action in Bluemix (**--url** when using create/update action)
 - Explained in demo

Demo (UI Demo & CI Demo)



References:

1. Baldini, Ioana, et al. "The Serverless Trilemma: Function Composition for Serverless Computing." Proceedings of the 2017 ACM SIGPLAN International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software, 2017, pp. 89–103.
2. <https://openwhisk.apache.org/> (accessed: 05/20/2018)
3. <https://console.bluemix.net/docs/> (accessed: 05/19/2018)
4. <https://console.bluemix.net/openwhisk/learn/cli> (accessed: 05/21/2018)
5. <https://console.bluemix.net/openwhisk/learn/pricing> (accessed: 05/17/2018)
6. <http://www.actoncloud.com/blog/compare-serverless/> (accessed: 05/17/2018)
7. <https://thenewstack.io/hands-guide-creating-first-serverless-application-apache-openwhisk/> (accessed: 05/08/2018)

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**Thank you
&
Q/A**