

Introduction to Serverless Computing

IBM Code

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Important Links

Wireless

IBM Sign up – <http://ibm.biz/ibmcloud4serverless>

Slides – <http://ibm.biz/galvanize-serverless-092718>



What is Serverless?

What is Serverless?

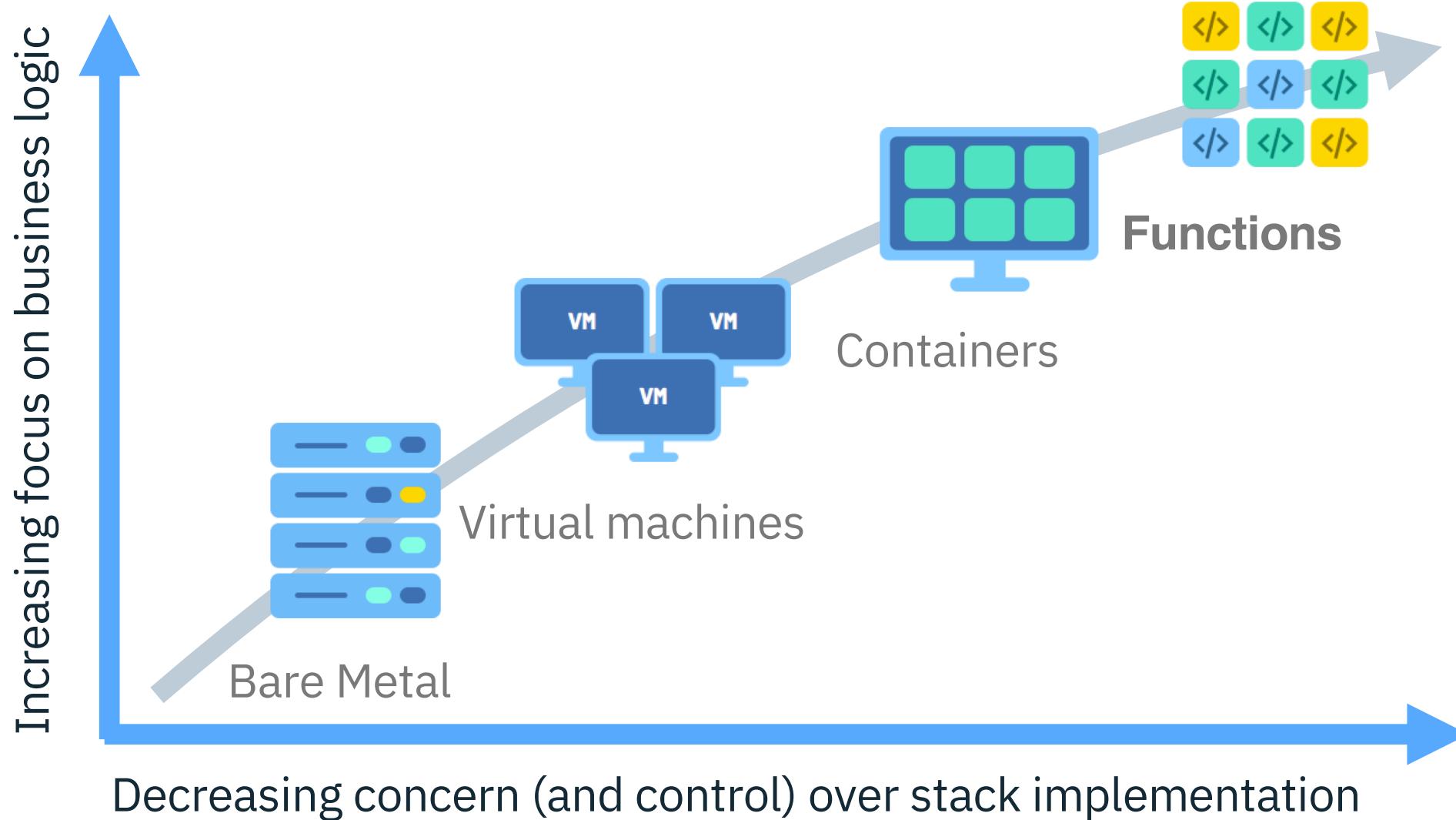
Serverless computing refers to the concept of building and running applications that **do not require server management**.

It describes a finer-grained deployment model where applications, **bundled as one or more functions**, are uploaded to a platform and then **executed, scaled, and billed** in response to the **exact demand needed** at the moment.

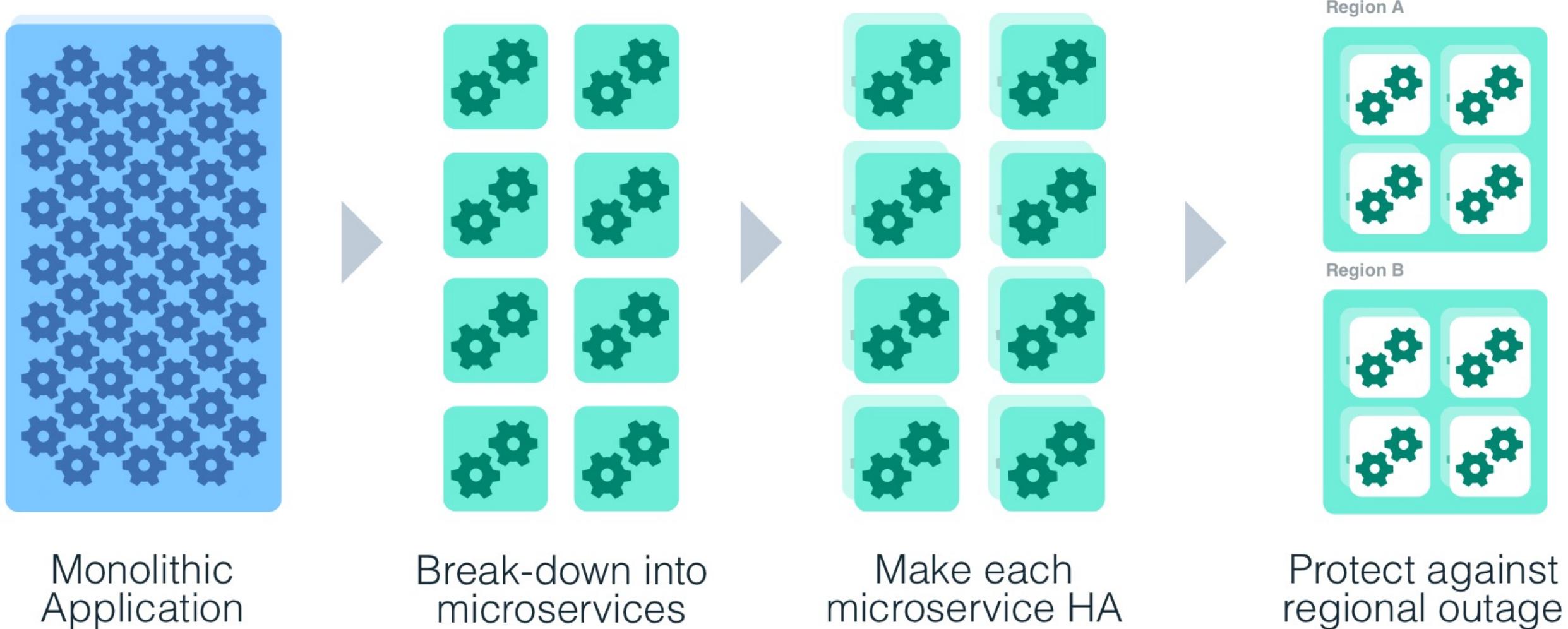
It refers to the idea that consumers of serverless computing **no longer need to spend time and resources on server provisioning, maintenance, updates, scaling, and capacity planning**. Instead, all of these tasks and capabilities are handled by a serverless platform and are completely abstracted away from the developers

<https://github.com/cncf/wg-serverless/tree/master/whitepapers/serverless-overview>

What is Serverless?



What is Serverless?



What is Serverless?

Runs code **only** on-demand on a per-request basis

Serverless deployment & operations model



Not your problem

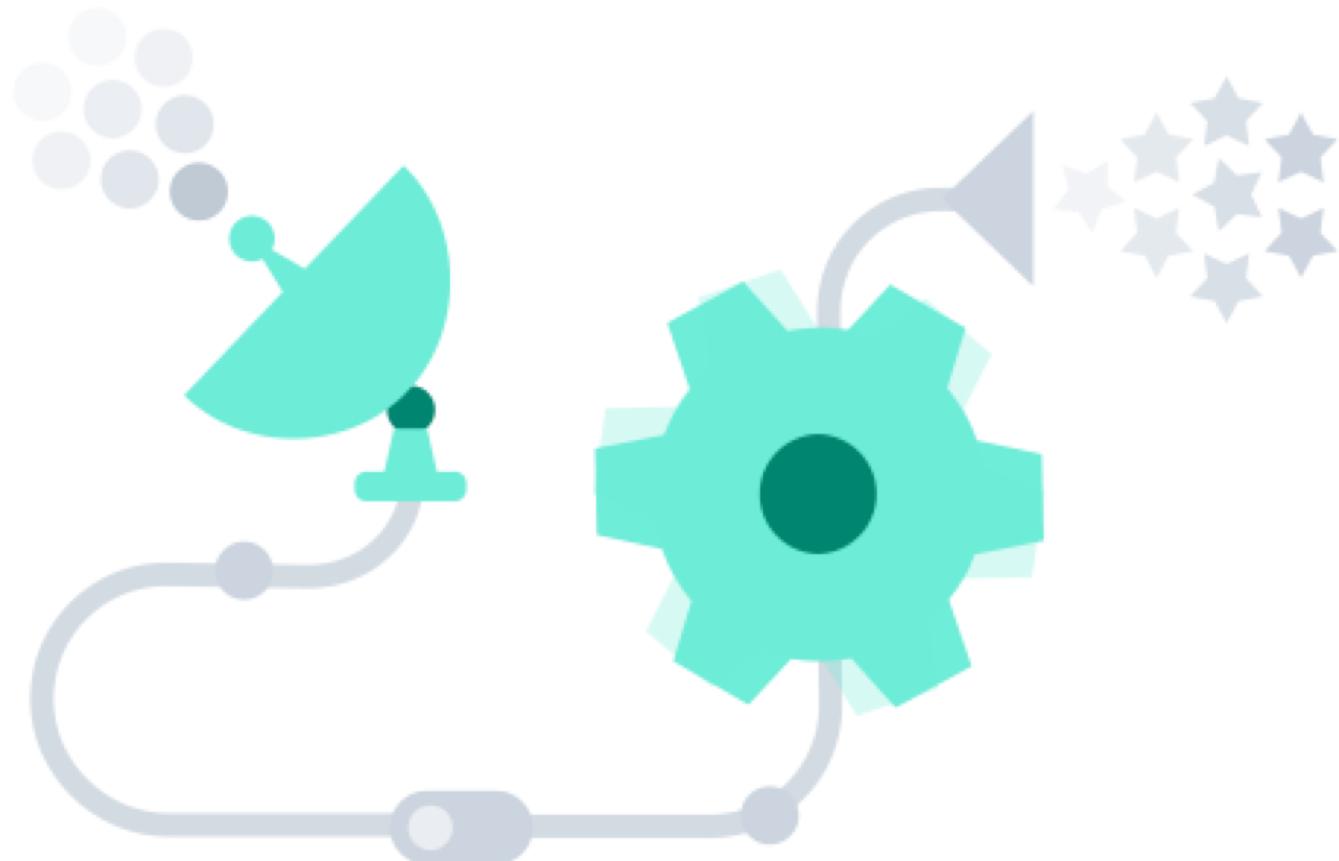


Focus on CODE

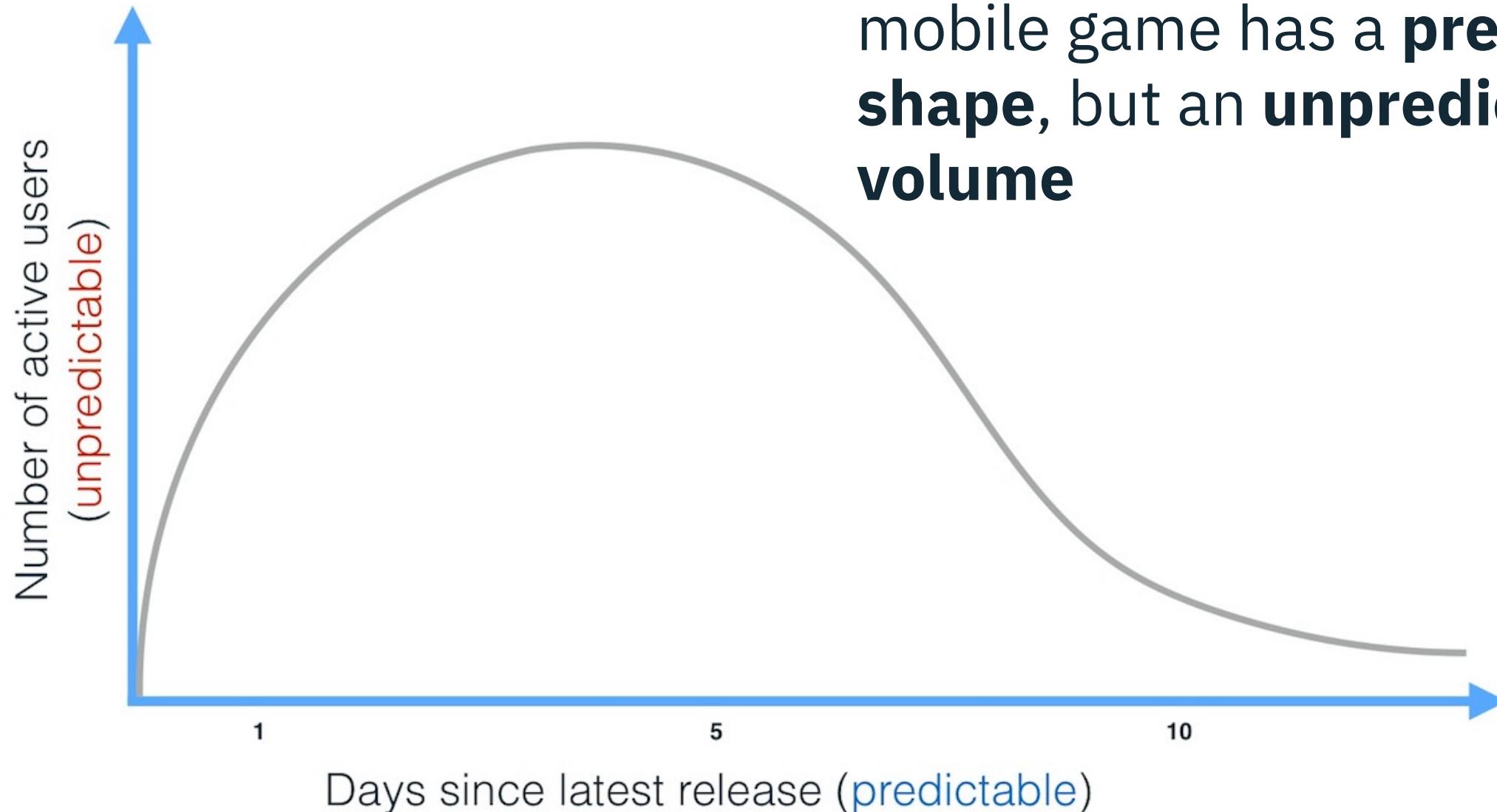
What is Serverless?

Runs code **in response**
to events

Event-
programming
model

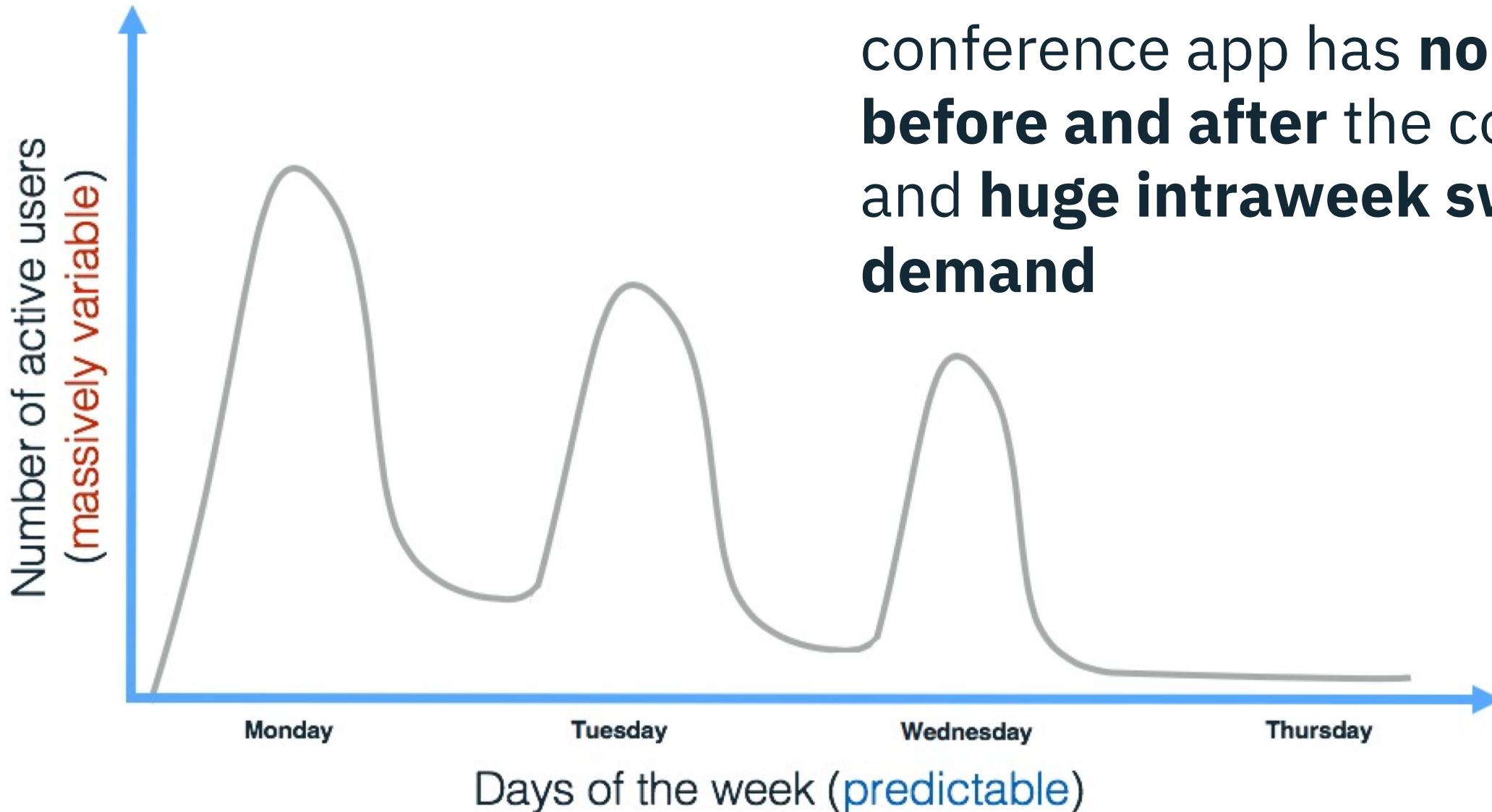


Why Serverless?



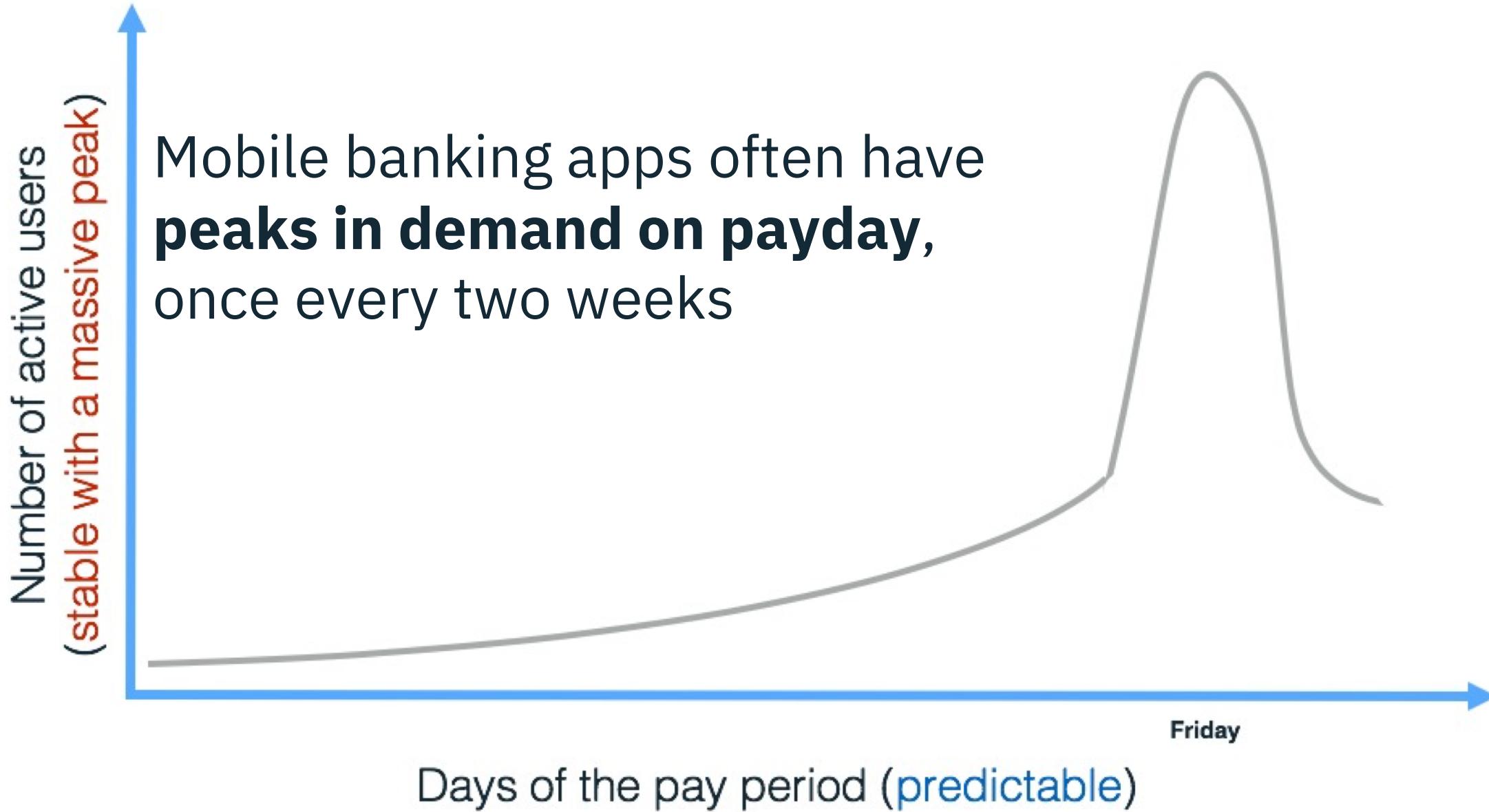
Active users curve for a new mobile game has a **predictable shape**, but an **unpredictable volume**

Why Serverless?



Active users curve for a mobile conference app has **no demand before and after** the conference, and **huge intraweek swings in demand**

Why Serverless?



Use cases

Serverless Backends



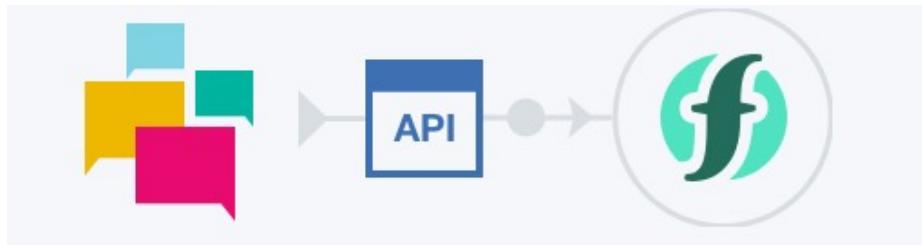
Mobile Backend



Data Processing



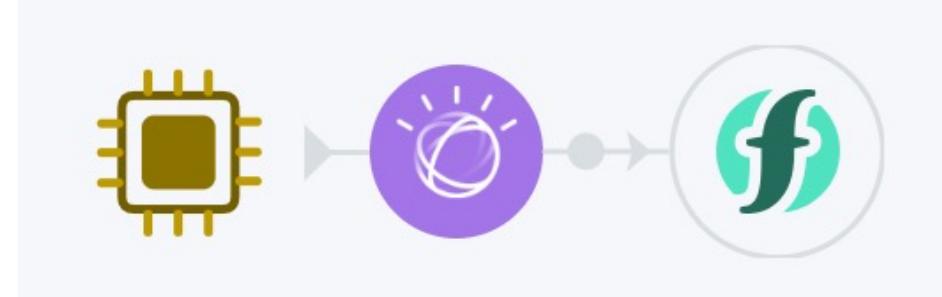
Conversational Scenarios



Cognitive Data Processing



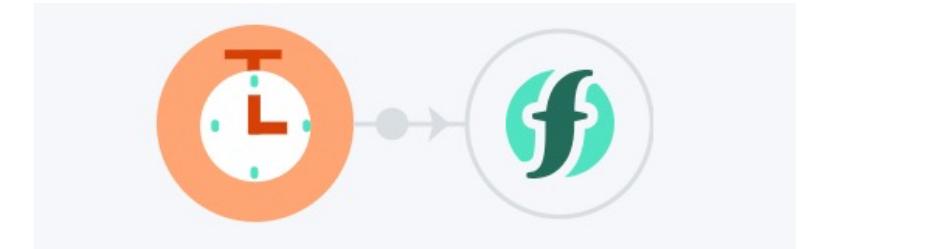
IoT Ready



Event Stream Processing



Scheduled Tasks



Use Cases

Asynchronous, concurrent, easy to parallelize into independent units of work

Infrequent or has sporadic demand, with large, unpredictable variance in scaling requirements

Stateless, ephemeral, without a major need for instantaneous cold start time

Highly dynamic in terms of changing business requirements that drive a need for accelerated developer velocity

Use cases

Use Cases

Static web sites with some processing like Contact forms

Automated backups

Bots 

Tasks like uptime check, policy enforcement

Background jobs

Prototypes

Language support and the competitive space

Amazon Lambda

- Node.js, Python, Java, C# and Go

IBM Cloud Functions

- Node.js 8, Node.js 6, Python 3.6.4, Python 3.6.1, PHP 7.1, PHP 7.2, and Swift 4, Swift 3.1.1, Ruby 2.5
- Other languages can be added via Docker container (for example Java)
- Based on open source OpenWhisk serverless platform. Can create your own serverless platform based on OpenWhisk

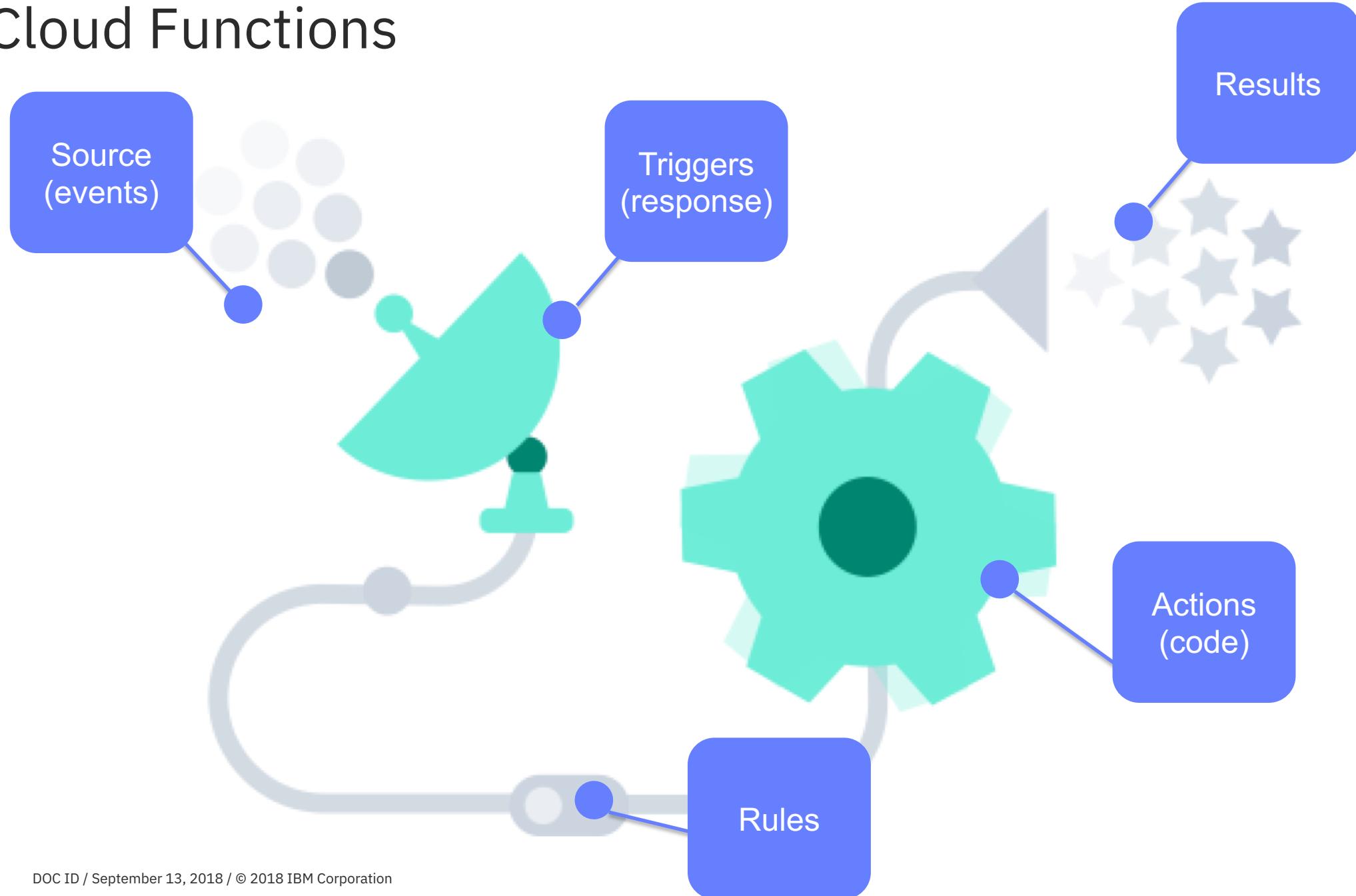
Microsoft Azure

- C#, F#, Node.js (in GA)
- Java, Python, PHP, TypeScript, Bash, PowerShell (experimental mode)

Google Cloud Function

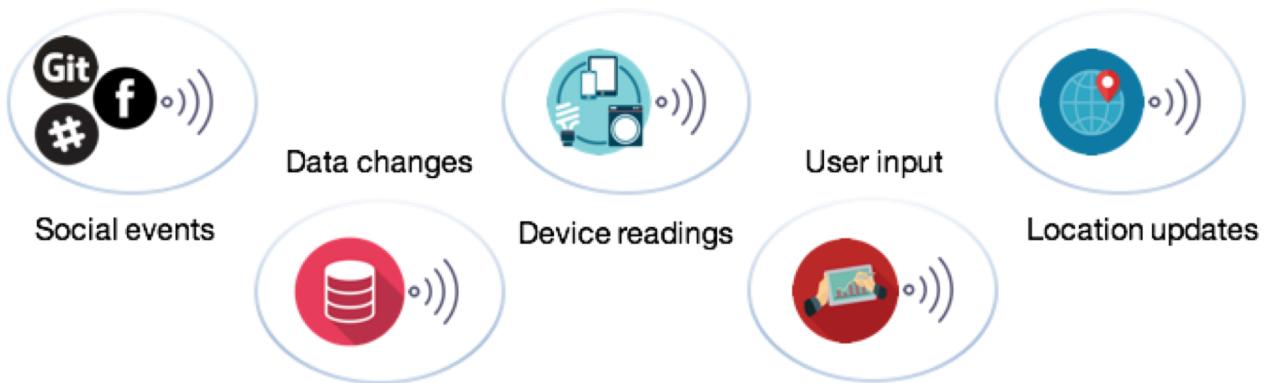
- Node.js, Python

IBM Cloud Functions



IBM Cloud Functions

T A class of events that can occur → **R** An association of a trigger to an action in a many to many mapping.



A Can be written in a variety of languages, such as JavaScript, Python, Java, PHP, and Swift

JS/NodeJS 8	Swift 4	Go	Ruby
Java	Docker	Rust	bash
Python 3	PHP 7	C	...

IBM Cloud Functions

P

A shared collection of triggers and actions



IBM Cloudant*

A

read

A

write

T

changes



IBM Watson

A

translate



A

forecast

Open
Source



A post
T topic

Third
Party

Git

T commit

Yours



A myAction
T myFeed

IBM Cloud Functions

	Open source	Hosted service
Serverless engine	Apache OpenWhisk	IBM Cloud Functions
API Gateway	LoopBack	IBM API Gateway
Databases	Apache CouchDB MySQL	IBM Cloudant IBM Compose
Message streams	Apache Kafka	IBM Message Hub



DEMO



IBM Code

Things to consider

- Functions are stateless. Need some sort of persistence between runs.
- Are you able to test and develop locally ? `ibmcloud fn CLI`
- Can you easily version your functions ? Source control ?
- Can you easily monitor your functions ?
- Security and API gateway
- Avoid long-running loops / mini-monoliths ?
- Latency (cold, warm and hot loads)
- How do you track dependencies ?

Resources

Lists

- <https://github.com/anaibol/awesome-serverless>
- <https://github.com/pmuens/awesome-serverless>
- <https://twitter.com/tmclaughbos/lists/serverless>

Email newsletter

- <https://serverless.email/>

Code Patterns

- <https://developer.ibm.com/patterns/category/serverless/>

Serverless architecture

- <https://martinfowler.com/articles/serverless.html>

Code Patterns

CODE PATTERN | SEP 19, 2018

Train an Anki Cozmo robot to recognize other toys

[Get the Code »](#)

Containers IBM Cloud +

CODE PATTERN | AUG 28, 2018

Run serverless functions with image recognition

[Get the Code »](#)

IBM Cloud Serverless

CODE PATTERN | MAR 14, 2018

Deploy a serverless multilingual conference room

[Get the Code »](#)

Cloud Foundry Gaming +

CODE PATTERN | FEB 21, 2018

Create a podcast downloader using serverless technology

[Get the Code »](#)

IBM Cloud Microservices +

CODE PATTERN | NOV 28, 2017

Develop protected serverless web applications

[Get the Code »](#)

Cloud IBM Cloud +

CODE PATTERN | NOV 27, 2017

Analyze an image and send a status alert

[Get the Code »](#)

Cloud Foundry Node.js +

CODE PATTERN | NOV 16, 2017

Analyze industrial equipment for defects

[Get the Code »](#)

IoT Platform as a Service +

CODE PATTERN | OCT 20, 2017

Create an Alexa skill with serverless and a conversation

[Get the Code »](#)

Cloud Databases +

IBM Code SF – Upcoming Events

3
OCT

Wednesday, October 3, 2018, 6:00 PM

Hands-on chatbot workshop with Watson AI and Dashbot Analytics

2
OCT

Tuesday, October 2, 2018, 6:00 PM

Managing and Securing Containers with Istio & Fun Tric...

17
OCT

Wednesday, October 17, 2018, 9:30 AM

Online Meetup: Anatomy of a chatbot and building a...

18
OCT

Thursday, October 18, 2018, 6:00 PM

Securing Kubernetes with Kritis and Istio, a joint IBM/Google...

31
OCT

Wednesday, October 31, 2018, 9:30 AM

Online Meetup: Deploy your bot to Slack and other social...

7
NOV

Wednesday, November 7, 2018, 9:30 AM

Online Meetup: Continuously improve your Watson Bot using...

25
OCT

Thursday, October 25, 2018, 9:30 AM

Online Meetup: Empower your chatbot and add a personality

CALL FOR CODE

COMMIT TO THE CAUSE. PUSH FOR CHANGE.



Creator

Founding Partner



Charitable Partners



Program Affiliates



Gold Sponsors



GRAND PRIZE

- The *Call for Code Global Award* selected by a jury of eminent technologists and presented at the Call for Code Award Event
- A **\$200,000 USD Cash Prize**
- Long-term open source project support from *The Linux Foundation*
- Venture capitalist introduction with *NEA* and pitch opportunity to turn your idea into a funded company
- The chance to deploy your solution with an *IBM Corporate Service Corps* team on the ground

SECOND AND THIRD PLACE

- Invitation to the Call for Code Award Event
- A **\$25,000 USD cash prize**
- Long-term open source project support from The Linux Foundation

FOURTH AND FIFTH PLACE

- A **\$10,000 USD cash prize**

Open Data Science Conference (50% Discount for IBM)



The banner features a dark background with a molecular or network graph pattern in blue and grey. On the left, the hashtag #ODSC is displayed above a cluster of molecular structures. In the center, the text "ODSC West • San Francisco" is written in large white letters, followed by "2018" in a slightly smaller white font. Below this, the event dates "October 31st – November 3rd" and location "• Hyatt Regency" are shown in white. At the bottom, two teal-colored buttons contain the text "2018 PRELIMINARY SCHEDULE" and "REGISTER FOR 20% OFF". The top navigation bar includes links for ODSC EAST | EUROPE | WEST | INDIA | UKRAINE | Blog | Careers | Newsletter | Job Board | Partners | About | Home.

Open Data Science Conference

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#ODSC

ODSC West • San Francisco

2018

October 31st – November 3rd • Hyatt Regency

2018 PRELIMINARY SCHEDULE

REGISTER FOR 20% OFF

Thank you!

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> blog.upkarlidder.com

IBM Code

IBM Sign up – <http://ibm.biz/ibmcloud4serverless>
Slides – <http://ibm.biz/galvanize-serverless-092718>