Serverless for Managers: Everything You Need to Know

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What is ‘Serverless Computing’?

‘serverless’ ≠ ‘no servers’

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Features

Polyglot

- Major language support (Java, Node, Go, Python)
- Support for other languages via shims or community workarounds

Features

Cloud Deployment

- Usually writing for one provider, although frameworks can lessen pain of switching
- OpenWhisk allows you to create your own FAAS platform.

Features

Pay-per-invocation

- Pricing is usually based per-invocation and the amount of memory used
- Most providers have generous free tiers

Features

Scaling

- SEP: someone else’s problem

The Serverless Ecosystem

Major Players

AWS Lambda

Node.js (JavaScript), Python, Java (Java 8 compatible), and C# (.NET Core) and Go.

IBM Cloud Functions

Node.js , Python, PHP, and Swift; other languages can be used with Docker containers.

IBM CF is a managed instance of Apache OpenWhisk, the open-source serverless project.

Google Cloud Functions

Node.js only.

Azure Functions

C#, F#, and Node.js are GA; Java, Python, PHP, TypeScript, Bash, PowerShell, and .bat/.cmd are supported in Experimental mode in v1.X.

Other Players

Twilio Functions, Webtask from Auth0, Iron.io IronFunctions, StdLib, SpotInst, and more all the time ...

Choose your FAAS provider based on your needs, not hype

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Serverless Use Cases

Use Cases

Low-Volume

- Contact forms
- Static (brochureware) websites
- Automated backups
- Bots
- Ops tasks (policy enforcement, uptime checks)

Use Cases

Bursty Compute

- Data processing (especially ETL)
- Data pipelines of all flavors
- Event-driven computing

Use Cases

Heavy Backend Tasks

- Generating PDFs
- Image resizing
- Batch processing

Use Cases

Tiny Apps

- APIs
- Microservices (sometimes called nanoservices)

Don’t run a server all the time if you don’t need a server all the time!

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Serverless Best Practices

Best Practices

Think Stateless!

Functions may have a ’clean slate’ each time … or they may not.

Best Practices

Think Event-Based!

Make sure you have a plan to handle failed or lost events.

Best Practices

Think Security!

Keep roles tight (think principle of least privilege) to limit access to functions, and to limit what resources functions can access.

Best Practices

Think Resources!

Tune your functions to use the right amount of memory and watch your execution time.

Best practices for serverless are much like best practices for cleanly coded functions.

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Things to Consider

Development

- Can you develop locally?
- How will you handle unit and integration testing?

Things to Consider

Deployment

- How will you handle versioning? Rollback?
- How will your CI/CD process change?

Things to Consider

Monitoring

- How will you profile your code?
- What will debugging look like?
- How will you manage and inspect your function logs?

Things to Consider

Service Discovery

- How will you keep track of service credentials?

Think about the characteristics of serverless applications both separately and together.

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Gotchas

Size

- If you’re using big libraries, you may run into the upper limit of deployable function size.
- Know the limits on the number of concurrent functions and number of deployed functions.

Gotchas

Recursion

- If your function calls itself, or calls other functions, watch out for infinite loops!

Gotchas

Datastores

- Your function may scale, but can your DB handle the write load?

Gotchas

Latency

- Cold starts are a problem!
- Consider keeping your function “warm” with scheduled invocations

Keep in mind the warning signs of a malfunctioning serverless function.

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Serverless Resources

Resources

Lists

github.com/anaibol/awesome-serverless

github.com/pmuens/awesome-serverless

twitter.com/tmclaughbos/lists/serverless

Newsletters

Serverless Weekly

Serverless Status

Cold Start

Code & Architecture

developer.ibm.com/code/patterns/category/serverless

github.com/serverless/examples

martinfowler.com/articles/serverless.html

Resources

Create a Learning Plan

- Pick one use case (look for a code pattern!)
- Decide on success criteria that matters to you
  - speed of development
  - reduced costs
  - more flexibility
- Look for blog posts by people who have implemented your use case—learn from others' mistakes!
- Prototype your business logic
- Prototype end-to-end:
  - local development
  - Logging/monitoring
  - CI/CD

Resources

IBM Cloud

- Sign up for an IBM Cloud Lite Account!
  https://ibm.biz/BdZqwA

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Thank you

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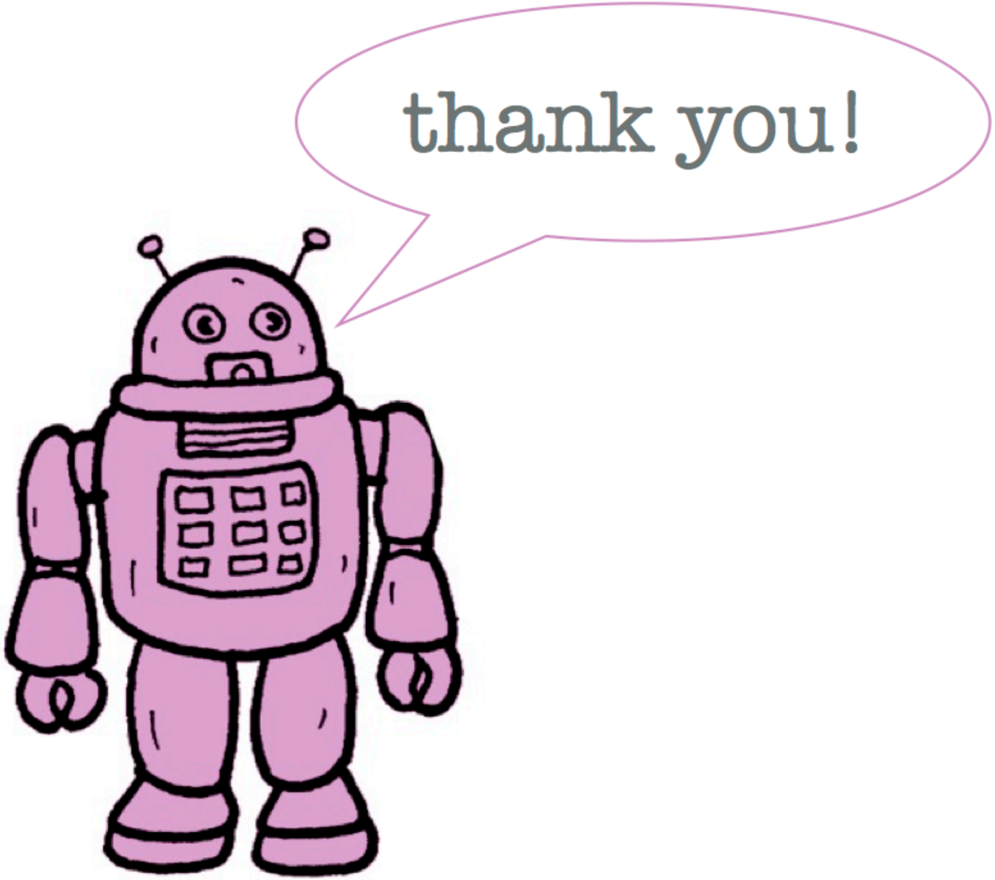

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