XSpec in the Cloud with Diamonds

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XSpec

Markup UK 2019

With Apologies to The Beatles. . .

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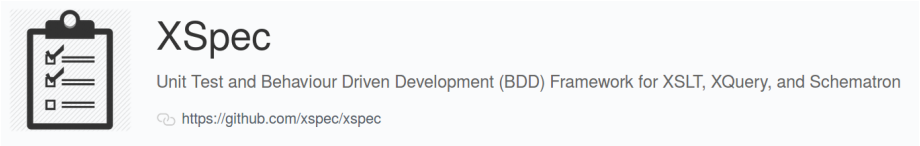
Content

About Me

- **Co-maintainer of XSpec** since 2016
- Lead Language Technologist at **Oxford University Press**

What is XSpec?

- XSpec is an open source **unit test** and behaviour-driven development (BDD) framework **for XSLT, XQuery, and Schematron**
- **XSpec v1.3.0** was released on **7th May 2019**
- XSpec is **included in oXygen**



Ways of Running XSpec

- On a **local machine** via shell/batch scripts, oXygen XML editor, etc.
- On a **CI server** like Jenkins, TeamCity, etc.
- On an **online CI service** like Travis, AppVeyor, CircleCI, etc.

CI Servers vs Online CI Services

CI Servers

- ✓ Fine grained control
- ✓ Works on both public and private repos
- ✗ Requires a server
- ✗ Requires a sysadmin to maintain server and software

Online CI Services

- ✓ Free and runs on the cloud
- ✓ No server/software maintenance
- ✗ Basic functionalities for public repos
- ✗ Charges for private repos

Wouldn't it be nice to run tests from private repositories while keeping costs low and avoiding server and software maintenance?

Enter XSpec in the Cloud with Diamonds

Running XSpec Tests in a Serverless Architecture

- **No servers** to provision or maintain
- **No** underlying software to **patch**
- Works for both **public and private repos**
- Cost based on **usage**
- Serverless architecture based on **AWS Lambda**

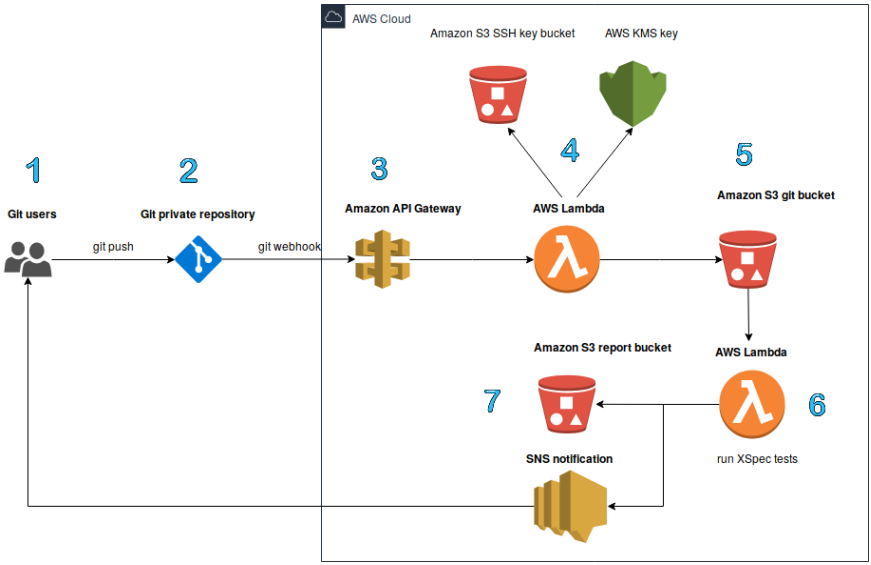
AWS Lambda

- **Lambda** is a compute service provided by **Amazon Web Services (AWS)**
- AWS Lambda allows to **run code without provisioning or managing servers**
- It can automatically **scale** from few requests per day to thousands requests per second
- It charges for the compute time used (**no use = no charge**)

Serverless Architecture

- A Serverless Architecture is a **cloud architecture** running a **function** inside a **stateless** computing environment
- The function is **triggered by an event**
- **Lambda** is used **in conjunction with other AWS services** to build a serverless architecture

Serverless Architecture for Running XSpec Tests



Demo Time

Talk is cheap. Show me the code.

Linus Torvalds

Benefits of Serverless Architecture

- **No server** provisioning
- **No** server or software **maintenance**
- Free up **software engineering time**
- **Scalability**
- Independent software components (**microservices)**
- **High availability**

Memory and Time Execution Constraints

- Parameters for **memory allocation and timeout** need to be adjusted according to workload
- Lambda can run a function for up to **15 minutes**
- **Multiple lambda functions** can be run **in parallel**
- **Break down XSpec tests** into different groups and assign a lambda function for each group of tests

Cost Optimization

- **Reduced operational costs**
- **Monitor costs** in the cloud and set billing alarms
- AWS Lambda offers a **generous free tier** (1 million free requests and 400,000 GB-seconds of compute time per month)
- Watch out **memory and timeout settings**

Vendor Lock-in

- Nowadays all major cloud providers offer similar offers (**Azure Functions**, **Google Cloud Functions**, etc.)
- Building serverless applications with a cloud provider inevitably comes with a **degree of vendor lock-in**
- Most cloud services are **proprietary and cannot be easily ported**

Summary

- I showed you an alternative approach for **running XSpec tests using a serverless architecture build on AWS**
- Suitable for both **private and public repositories**
- Major benefits of this approach are **reduced operational costs and no server maintenance**
- I would be interested in **helping** anyone willing to implement this workflow

Links

Thank you for your attention!

Contact:
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sandrocirulli.net/contact

Slides:
sandrocirulli.net/markupuk2019

Code:
github.com/cirulls/markupuk2019

XSpec:
github.com/xspec/xspec
github.com/xspec/xspec/wiki

And Thanks to The Beatles!