Leveraging Cloud Infrastructure for INSPIRE Services

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What I’m not going to talk about

- FME

OK, maybe a little
Another thing I am not going to talk about

- Basics of Cloud Computing

...other than 2 terms we need
- Platform as a Service - **PaaS**
- Software as a Service - **SaaS**
What I did not find

Not many of our customers use Cloud services for *INSPIRE* YET
What I did find out

1. How Cloud Computing is being used by some of our customers for INSPIRE both as PaaS & SaaS
2. What we’ve learned from our own FME Cloud product and our customers
1. How are *Cloud Services* being used by us at Safe Software and our customers?
File and Block Storage

- AWS S3
- Azure Blob Storage
- Example EEA
Virtual Servers and Web Servers

- AWS EC2
- Azure Virtual Machines

Examples:
- ArcGIS for INSPIRE on EC2 – Andulucia Environment Agency
- Azure Virtual Machines - Ordnance Survey UK
Containers

Docker Examples

- FME Server
- Ldproxy
Compute Services

- AWS Lambda
- Azure Functions
Compute – Example Processing

ECMWF

Diagram:
- Incoming files, 12GB every 12 hours.
- Inbound S3 bucket
- New file event triggered
- AWS Lambda Code
- FME Cloud Instances Running?
  - Yes: Send Message to SQS queue
  - No: Launch instances via the FME Cloud API
- Launch instance request sent?
- SQS queue

Paas

The Weather Network

Serverless Architecture
Database

- AWS: RDS, Aurora, Dynamo DB

- Azure: SQL Database, SQL Data Warehouse
Database: Example IsoGeo
Software as a Service (SaaS)

Examples

- FME Cloud
- ArcGIS Online
- IsoGeo
2. What we’ve learned at Safe
Costs

Risks
- Costs are not fixed, can vary monthly
- Easy to spend lot (use billing alerts)

Benefits
- no capex
- no hardware costs
- overall, very cheap relative to on premises
AWS is probably more secure than your data center.
Security by Design in the Cloud

- Physically secure (no USB key access)
- 2-factor authentication built in
- Key rotation facilitated
- DDOS detection
- Automatic malware detection
- Security Group – firewall for instances
- Encrypted Always (ex. FME Cloud is HTTPS by design)
- Security updates
Data Privacy

European Union General Data Protection Regulation
AWS, Azure... these are multibillion dollar businesses who are ready for this.

- AWS and the General Data Protection Regulation (GDPR)
- AWS EU Data Protection
- Get GDPR compliant with the Microsoft Cloud
We can all Innovate Faster

- Saas Model: quick to deploy
  - Ex. FME Cloud Instances started within minutes
- Container technology
  - easy delivery of proof-of-concept and final solution
Innovate Faster - Example

7 Days: Live vessel tracking from enquiry to production with FME Cloud

David Eagle
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What’s Craig David like at Project Management?

I met this girl on Monday

Took her for a drink on Tuesday

We were making by Wednesday

And on Thursday & Friday & Saturday
we chilled on Sunday
Scaling

- Instant or Auto Scaling
  - For example FME Cloud has disk, temp and instance scaling
Performance

Cloud Infrastructure Provides so much!

- Example Content Delivery Networks

AWS CloudFront

Azure CDN

Huge potential benefit for INSPIRE download services

*CloudFront already used extensively in FME Cloud.
Uptime & Disaster Recovery
Uptime & Disaster Recovery

- Built in monitoring and alerts tools
- Built in backups and rollbacks
We found

1. Cloud Computing *is* being used by some of our customers for INSPIRE both as PaaS & SaaS.

2. We love Cloud Services at Safe Software and we firmly believe embracing the Cloud makes any data sharing platform more successful.
Thank You!

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