CLOUD NATIVE INTEGRATION PLATFORM

Sebastien Goasguen

We have come a long way in 6 years !!!



CLOUD NATIVE COMPUTING FOUNDATION



particularly

path.

well-traveled

REPLY

SUSE

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Sysdig TEAMERIN

Overwhelmed? Please see the CNCF Trail Map. That and the interactive landscape are at l.cncf.io

Greyed logos are not open source



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REPLY CONTROL

Three narratives

Containers vs VM

- Switch from Openstack to Kubernetes
- Containers as the application package
- No more (or as less as possible) undifferentiated code
 - Delegate "boring" things
 - Concentrate on where you bring value
- No more (or as less as possible) undifferentiated infrastructure
 - Use managed services





For good reasons

Run critical and differentiated bits on-premises based on a container "stack"

• kubernetes on-premises

Delegate infra management but keep control of application workload

- GKE, AKS, EKS ...
- Lambda, Cloud Run, Azure functions
- PaaS...
- •

Use dedicated cloud offerings to benefit from leading expertise

Datadog, confluent



Cloud definition, a flash back ...



NIST definition



Diagram from https://www.vyomtech.com/2013/10/30/what_is_cloud_computing.html



There is no cloud it's just someone else's computer



Serverless ?

Build custom backend-services

Bring your own code

Fault-tolerance

Completely automated infrastructure

Automatic scaling

Only pay for what you use

aws					
Products	Solutions	Pricing	Documentation	Learn	Partner
AWS Lambda		Overview	Features	Pricing	Getting S

Key product features

Extend other AWS services with custom logic





There is no 'serverless' it's just someone elses fully managed execution environment that I only pay a fraction of a centfor whenever my function is run



The Cloud is becoming "Serverless" ...

Picture from Pablo Lorio https://medium.com/@pablo.iorio/

Serverless martket offerings





The Cloud is becoming "Serverless" ...

as it should be !

Picture from Pablo Lorio https://medium.com/@pablo.iorio/



Serverless martket offerings



What happens when you don't manage infra, delegate to specialized clouds and focus on differientating business logic?



You go serviceful !

"you don't manage servers, you just use services" - Patrick Debois, Config Management Camp, Gent 2017, Config stays forever



SERVICEFUL



DevOps to DevApps

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¹ See: thenewstack.io/from-devops-to-devapps/

A "Multi-cloud" environment ...





A "Multi-cloud" environment









We orchestrate the event flow from applications both on=premises and in the Cloud. **TriggerMesh Bridges** are made up of sources, brokers, targets and transformations











Some glue





Some bricks





And avoid making Spaghetti !





In better words:

- Events that inform about system changes
- APIs that can be used to program/automate
- Cloud services that are
 elastic/on-demand and pay-per use

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The API

...ideally similar API ...

kubernetes CRD to the rescue

- Extend Kubernetes
- Declarative API
- Reconciliation loops
- GitOps
- Same operational model as all kubernetes workloads

apiVersion: apiextensions.k8s.io/v1 kind: CustomResourceDefinition metadata: name: crontabs.stable.example.com spec: group: stable.example.com versions: - **name:** v1 storage: true schema: openAPIV3Schema:



Cloud as Kernel ... Kubernetes as the API ...

README.md

Source Cloud Why Google Solutions Products Pricing Getting Started	Azure Service Operator (for Kubernetes)
Config Connector Guides Reference Resources	Azure Pipelines succeeded
Config Connector Documentation Product overview Getting Started Config Connector > Documentation	Note: The API is expected to change (while adhering to semantic versioning). Alpha and Beta resources are generally not recommended for production environments. The Azure Service Operator helps you provision Azure resources and connect your applications to them from
How-to guides All how-to guides Installing, upgrading, and uninstalling	within Kubernetes.

Config Connector is a Kubernetes addon that allows you to manage Google Cloud resources through Kubernetes.

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Containers

Introducing the AWS Controllers for Kubernetes (ACK)

by Jay Pipes, Michael Hausenblas, and Nathan Taber | on 19 AUG 2020 | in Amazon Elastic Kubernetes Service, Containers, Open Source |

Permalink | 🗩 Comments | 🏞 Share



Setting your default namespace Organizing resources with projects

and folders

Declarative API for TriggerMesh Bridges

TriggerMesh provides a declarative API, which follows an OpenAPI schema, implemented in the Kubernetes API server.

All event sources, sinks/targets, bridges, transformation and state can be declared in API objects.

Which gives you: source of truth, peer review, gitops workflow and portability

```
apiVersion: flow.triggermesh.io/v1
kind: Bridge
...
apiVersion: sources.triggermesh.io/v1
kind: SalesForceSource
...
apiVersion: targets.triggermesh.io/v1
kind: SplunkTarget
...
```



Event Sources and Sinks/Targets





TRIGGERMESH - OVERVIEW

System Operation

s kubecti get poas -n triggermesn				
NAME	READY	STATUS	RESTARTS	AGE
aws-event-sources-controller-cf6569594-2jwrj	1/1	Running	0	27h
awseventbridge-event-target-controller-7b66f8b897-826s9	1/1	Running	0	27h
azureeventhubsource-webhook-5b465f686b-hmsv2	1/1	Running	0	30h
docs-7b88685848-5bsvz	1/1	Running	0	31h
event-sources-controller-764b4cdb68-zw2km	1/1	Running	0	27h
fe-5897f76848-24zkd	1/1	Running	0	31h
fe-5897f76848-79tv2	1/1	Running	0	31h
fe-5897f76848-xlhdg	1/1	Running	0	31h
knative-sources-controller-7584cc474b-rkh8t	1/1	Running	0	27h
knative-targets-controller-7968c6fc77-j4gmw	1/1	Running	0	27h
tm-backend-656f8557c4-j94df	1/1	Running	0	31h
transformation-controller-b4d8b58b8-k59mx	1/1	Running	0	30h
triggerflow-controller-fcd54667d-92r2d	1/1	Running	0	31h



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Use Cases

- **PoC:** DevOps Governance
- **Driver:** Automate Traceability for Audits





Use Cases

- **PoC**: CRM to Back-office infrastructure sync as first bridge
- Driver: Do not maintain undifferentiated code



Use Cases

• **PoC**: Healthcare







Conclusions

- The cloud is severless :)
- We are going serviceful
- We need bridges built from standards/specifications
- Events are the glue
- The Kubernetes API is the cloud API











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