influxdata®
Act in Time

Cloud Native Telegraf

Cloud Native London
September 2019

David McKay

InfluxData

Developer Advocate

- 🏴󠁧󠁢󠁳󠁣󠁴󠁿 Scottish
- 💙 Esoteric Programming Languages
- ☸️ Kubernetes Release Team
- 🚒 Former SRE
- 🍝 Former Developer

@rawkode

influxdata

Cloud Native Telegraf

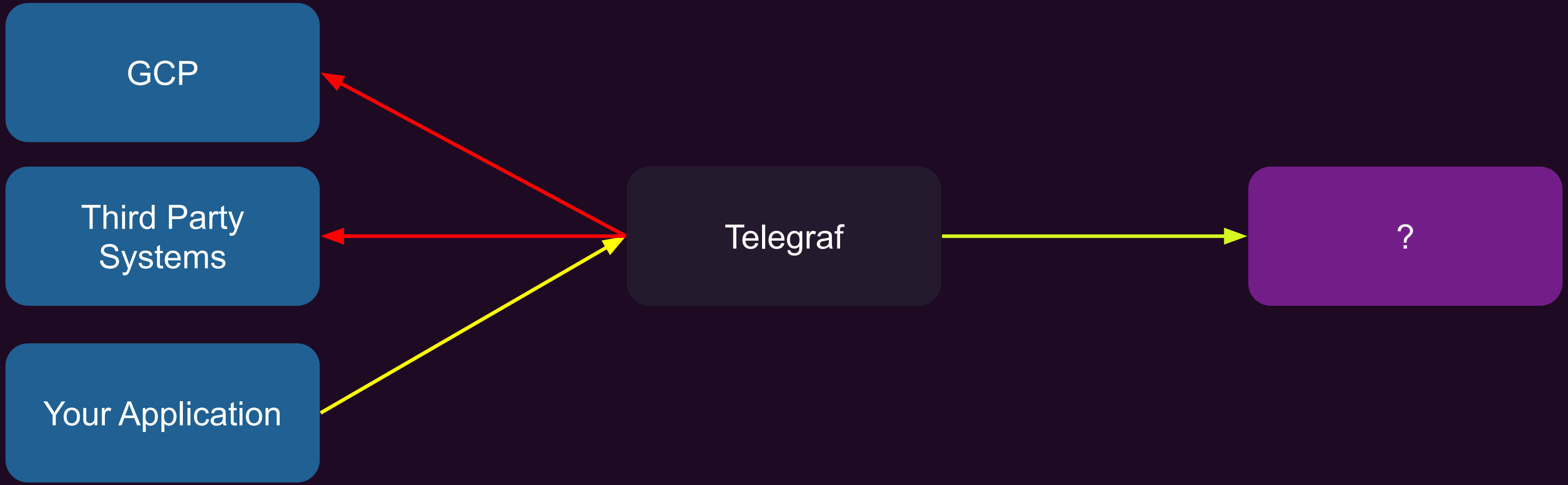
Can I have one Telegraf, please?

Telegraf

github.com/influxdata/telegraf

Telegraf is an agent for collecting, processing, aggregating, and writing metrics.

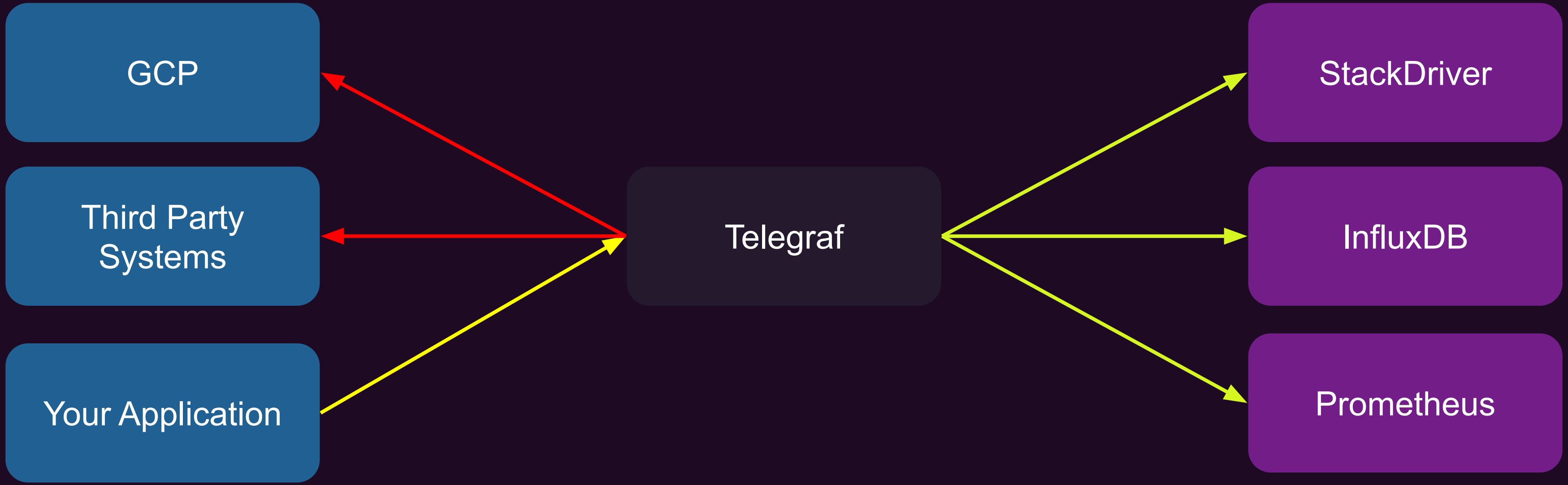
Architecture



@rawkode

Telegraf is Agnostic

Architecture



Plugins

Inputs	Outputs
★ Docker	→ CrateDB
★ Kafka	→ CloudWatch
★ Kubernetes	→ DataDog
★ Nats	→ Elasticsearch
★ Postgres	→ Graphite
★ System	→ InfluxDB
○ CPU	→ OpenTSDB
○ Disk	→ Prometheus
○ Disk IO	→ StackDriver
○ Mem	→ Wavefront
○ Process	

Plugins

Inputs	Outputs
> 160	> 35

@rawkode

influxdata

Input: activemq

Input: kubernetes

Kubernetes

- Should be run as a DaemonSet
- Hits the `stats/summary` endpoint of each kubelet
- Is responsible for gathering metrics for pods and their containers
- Will produce high cardinality data

Kubernetes

```
[[inputs.kubernetes]]
  url = "https://localhost:10255"
  bearer_token = "/run/secrets/token
  insecure_skip_verify = true
```

@rawkode

influxdata

Kubernetes

For Cloud Providers Managed Kubernetes or minikube

```
[[inputs.kubernetes]]
  url =
"https://kubernetes.default/api/v1/nodes/$NODE_NAME/proxy/
"
```

Kubernetes

Improvements

- ➔ 99.97% of the time, this plugin will run in-cluster
  - ◆ No reference, I made this number up
- ➔ So we don't need any configuration
  - ◆ We should trust you to manage RBAC
  - ◆ We'll use mounted ServiceAccount
  - ◆ We'll infer URL

Input: kube_inventory

Kube Inventory

- → Should be run as a Deployment, with a single replica
- → Hits the APIServer for resource information
- → Will give you information on Deployments, DaemonSets, Volumes, etc, etc
- → Will produce high cardinality data

@rawkode
influxdata

Kube Inventory

```
[[inputs.kube_inventory]]
   url = "https://kubernetes.default"
   bearer_token = “”
   resource_exclude = []
   resource_include = []
```

@rawkode

Kube Inventory

Improvements

- ➔ 99.97% of the time, this plugin will run in-cluster
  - ◆ I heard this once before
- ➔ So we don’t need any configuration
  - ◆ We should trust you to manage RBAC
  - ◆ We’ll use mounted ServiceAccount
  - ◆ We’ll infer URL

Input: prometheus

Prometheus

- Run it however you want
  - Globally
  - Per Namespace
  - Depends on your workloads
- Will scrape Prometheus endpoints
- Will discover services through Prometheus annotations

@rawkode
influxdata

Prometheus

```
[[inputs.prometheus]]
  monitor_kubernetes_pods = true
  # monitor_kubernetes_pods_namespace = ""

  bearer_token = ""
```

@rawkode

influxdata

Prometheus

Improvements

- ➔ 99.97% of the time, this plugin will run in-cluster
  - ◆ Definite fact, I've heard this more than once
- ➔ So we don't need any configuration
  - ◆ We should trust you to manage RBAC
  - ◆ We'll use mounted ServiceAccount

@rawkode
influxdata

Prometheus

Improvements

➔ Support ServiceMonitor CRD (Prometheus Operator)

Output: influxdb

InfluxDB

```
[[outputs.influxdb]]
 urls = ["http://influxdb.monitoring:8086"]

[[outputs.influxdb_v2]]
   urls = ["http://influxdb.monitoring:9999"]

   organization = "InfluxData"
   bucket = "kubernetes"
   token = "secret-token"
```

@rawkode
influxdata

Output: prometheus_client

Prometheus Client

```
[[outputs.prometheus_client]]
 ## Address to listen on.
 listen = ":9273"
```

Telegraf Super Powers

Proxying

Proxying

influxdb_listener is a service input plugin that listens for requests sent according to the InfluxDB HTTP API. The intent of the plugin is to allow Telegraf to serve as a proxy/router for the /write endpoint of the InfluxDB HTTP API.

Proxying

http_listener_2 is a service input plugin that listens for metrics sent via **HTTP**. Metrics may be sent in **ANY** supported data format.

Proxying

There's also socket_listener, tcp_listener, and udp_listener

@rawkode

influxdata

Batching

Batching

Telegraf will send metrics to outputs in batches of at most metric_batch_size metrics.

This controls the size of writes that Telegraf sends to output plugins.

Buffering

Buffering

If a write to an output fails, Telegraf will hold metric_buffer_limit worth of metrics in-memory before data is lost.

This is PER output

@rawkode

influxdata

These 2 simple settings get you redundancy, high availability, and performance optimisation of the write path.

Telegraf as a Sidecar

Telegraf as a Sidecar

Hopefully from everything I've discussed, you can see how Telegraf could be a useful addition to any application as a sidecar.

1. It can consume logs
2. You can write events / traces from your code
3. It can act as a local metric buffer during DB downtime

Telegraf as a Sidecar

Unfortunately …

The Telegraf binary is around 80MiB

The Telegraf image is around 250MiB / 80MiB

BYOT: Bring Your Own Telegraf

Bring Your Own Telegraf

```
FROM rawkode/telegraf:byo AS build

FROM alpine:3.7 AS telegraf

COPY --from=build /etc/telegraf /etc/telegraf
COPY --from=build
/go/src/github.com/influxdata/telegraf/telegraf
/bin/telegraf
```

@rawkode
influxdata

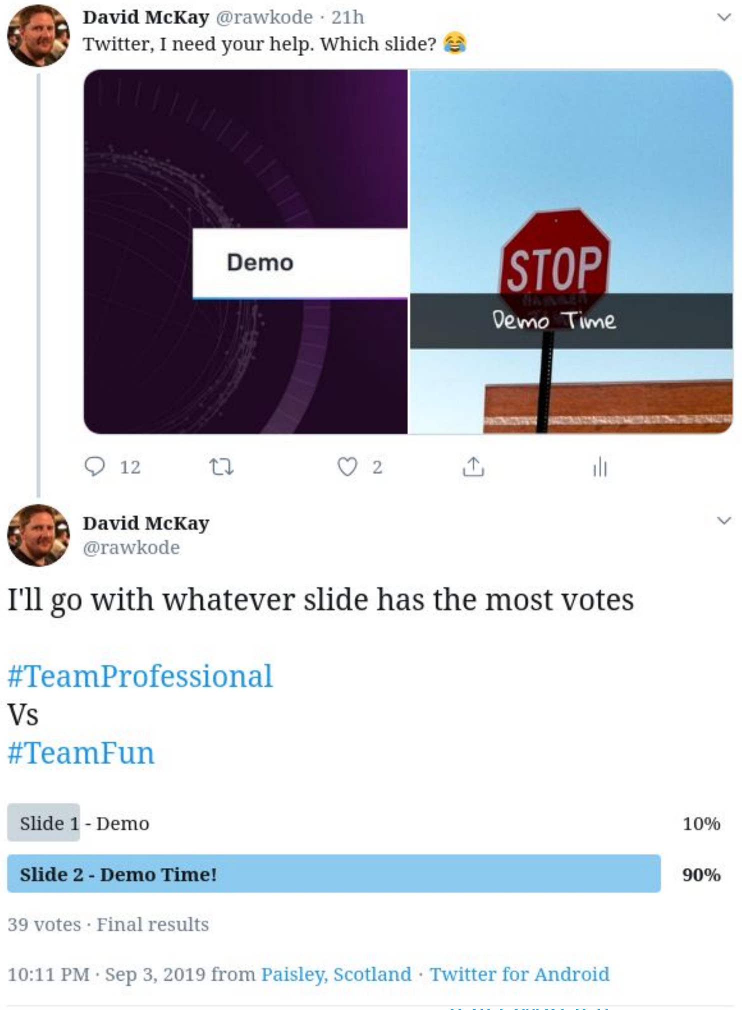
Telegraf Operator

Telegraf Operator

```yaml
apiVersion: influxdata.com/v1
kind: Telegraf
metadata:
 name: mine
spec:
 version: "1.12"
 scrape_prometheus: false
 sidecar_injection: true
 metric_server: true
```

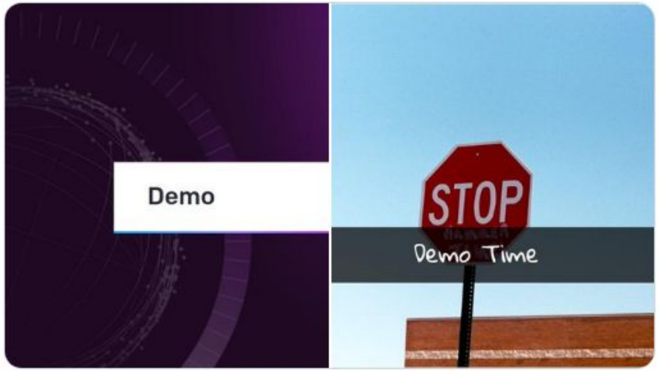
@rawkode
influxdata

Demo Time



David McKay @rawkode · 21h

Twitter, I need your help. Which slide? 😂



12 2

David McKay
@rawkode

I'll go with whatever slide has the most votes

#TeamProfessional
Vs
#TeamFun

Slide 1 - Demo	10%
Slide 2 - Demo Time!	**90%**

39 votes · Final results

10:11 PM · Sep 3, 2019 from Paisley, Scotland · Twitter for Android

🐦 @rawkode 🐦

Thank You

influxdata®

Act in Time