Grafana Labs

Instrument your Go backend in minutes

A gentle introduction to the Grafana Observability Stack.

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Presenter

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Overview

Introduction to the three pillars of observability

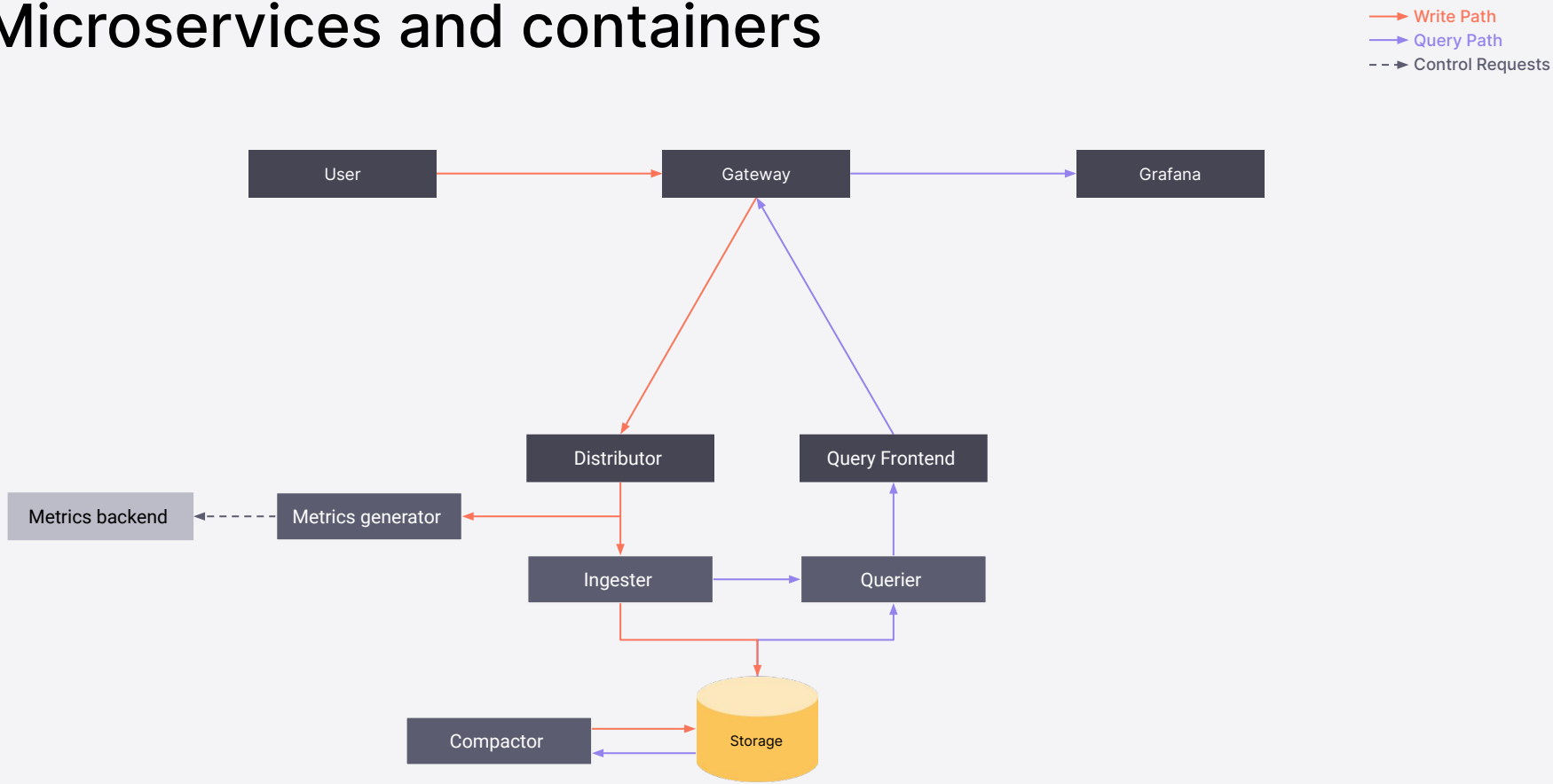
The LGTM stack

Instrumenting your application

Connecting it all together

Demo

Microservices and containers



Logs

Metrics

Traces

Grafana

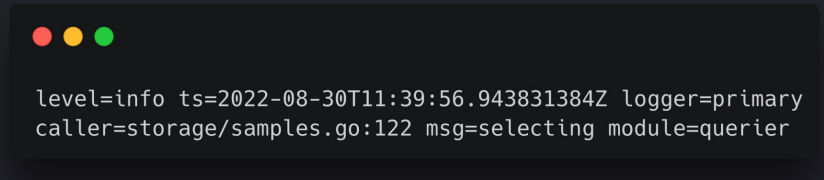
- The open source platform for monitoring and observability
- Lets you visualize data from heterogeneous sources

The holy backends

- Grafana Loki
  - Open source log aggregation system
  - LogQL support
- Grafana Mimir
  - Open source TSDB that provides a scalable long-term storage for Prometheus
  - PromQL support
- Grafana Tempo
  - Open source and high-scale distributed tracing backend
  - TODO: TraceQL support

Logging is simple

- Use correct format
  - logfmt, json
  - Arbitrary format can be used but requires regex parsing



Metrics are even simpler

- Just use Prometheus
- Supports all major languages
- First-class citizen in Grafana

```go
package main

import (
        "net/http"

        "github.com/prometheus/client_golang/prometheus/promhttp"
)

func main() {
        http.Handle("/metrics", promhttp.Handler())
        http.ListenAndServe(":2112", nil)
}
```

Traces... can be tricky

- Many “conflicting” implementations
- OpenTelemetry is the way to Go...

  even though it’s not as simple

```go
package main

import (
    "context"
    "fmt"
    "log"
    "net/http"
    "time"

    "go.opentelemetry.io/contrib/instrumentation/net/http/otelhttp"
    "go.opentelemetry.io/otel"
    "go.opentelemetry.io/otel/attribute"
)

// Package-level tracer.
// This should be configured in your code setup instead of here.
var tracer = otel.Tracer("github.com/full/path/to/mypkg")

// sleepy mocks work that your application does.
func sleepy(ctx context.Context) {
    _, span := tracer.Start(ctx, "sleep")
    defer span.End()

    sleepTime := 1 * time.Second
    time.Sleep(sleepTime)
    span.SetAttributes(attribute.Int("sleep.duration", int(sleepTime)))
}

// httpHandler is an HTTP handler function that is going to be instrumented.
func httpHandler(w http.ResponseWriter, r *http.Request) {
    fmt.Fprintf(w, "Hello, World! I am instrumented automatically!")
    ctx := r.Context()
    sleepy(ctx)
}

func main() {
    // Wrap your httpHandler function.
    handler := http.HandlerFunc(httpHandler)
    wrappedHandler := otelhttp.NewHandler(handler, "hello-instrumented")
    http.Handle("/hello-instrumented", wrappedHandler)

    // And start the HTTP serve.
    log.Fatal(http.ListenAndServe(":3000", nil))
}
```

Connecting it all together

Self-managed

Not all who wander are lost

Requires deploying and operating Grafana Agent.

Requires deploying and operating the Grafana Stack: Grafana, Grafana Loki, Grafana Mimir, and Grafana Tempo.

Free if you don’t value your time.

vs

Grafana Cloud

One click away

Requires deploying and operating Grafana Agent.

Fully-managed Grafana, Grafana Cloud Logs, Grafana Cloud Metrics, Grafana Cloud Traces.

Offers a generous free plan.

Demo

Q&A

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Thank you