

OBSERVABILITY DATA ENGINEERING

A STORY ABOUT MATH, FOUR GOLDEN SIGNALS, AND BUSINESS INTELLIGENCE

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DevOps Observability Architect

MONITORAMA PDX 2019: HOW TO KNOW IF SOMETHING IS “UP”

What do I monitor?

Google SRE's ~~Four~~ Five Golden Signals

Health Pods are Running and Healthy

Traffic Counter of Units of Work

Errors Counter of Units of Work with Exceptions

Latency Timer of the distribution of latencies for each Unit of Work

Saturation When Pods be scaled up or down

Remember: **There are FIVE lights!**

The ~~Four~~ Five Golden Signals is knowing before the customers do.

AS A DEVOPS OBSERVABILITY ARCHITECT...

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We need to set alerts for these super special customers.

Well, if we set our Histograms correctly and record maximum values we will be able to tell when...

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Jack, we're an Enterprise!

starship goes here

TRAFFIC

WHY COUNTERS WORK

Systems based in cumulative monotonic sums are naturally simpler, in terms of the cost of adding reliability. When collection fails intermittently, gaps in the data are naturally averaged from cumulative measurements.
– OpenTelemetry Data Model

Most Accurate: Incremented in discrete whole numbers. Never misses an event.

Synchronization Primitive: Allows for multiple observers.

Low Overhead: Easy implementation. No copying or recalling previous values.

Fundamental: **Position!**

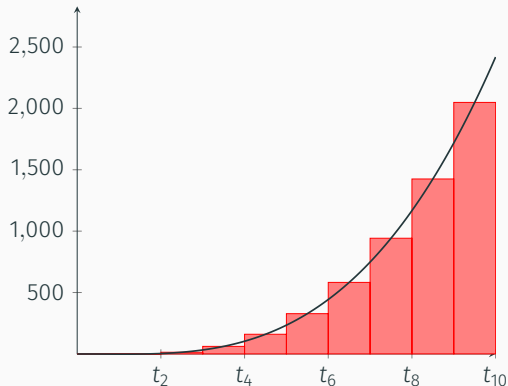
REMEMBER PHYSICS

Position

Velocity

Acceleration

COUNTING CAVEATS: RIEMANN SUMS



```
interval: 5m
rules:
- record: labels:http_server_requests:rate5m
  expr: >
    sum by (service, namespace, status) (
      rate(http_server_requests_seconds_count{})[5m])
    )

- record: labels:http_server_request_5xx:ratio5m
  expr: >
    sum without (status) (
      labels:http_server_requests:rate5m{status=~"5.."}
    ) /
    sum without (status) (
      labels:http_server_requests:rate5m{}
    )
```

ERRORS

LATENCY

SATURATION

CUSTOMERS