OBSERVABILITY AND THE DEV PROCESS

@cyen
@honeycombio

Hi.

OPS

"THE ONLY GOOD DIFF IS A RED DIFF"

DEV

"WORKS ON MY MACHINE"

"NINES DON’T MATTER IF USERS AREN’T HAPPY"


OPS
DEV

OPS DEV

OBSERVABILITY

OPS

e2e Checks

Alert Thresholds

Resource Allocation

Networking

CPU Utilization

Hosts + Instance Types

DEV

Builds (/ Build IDs)

Customer IDs

Endpoints

Other repro-able characteristics

"Huh, CPU Utilization is increasing on that cluster. Time to increase capacity!"

"Request volume is increasing on that cluster… but it looks like it’s mostly one customer."

- Design documents
- Architecture review
- Test-driven development
- Integration tests

DEV

- Code review
- Continuous integration
- Continuous deployment
- 🎉🥂🍾🎊
- (Wait for exception tracker to complain)

OPS DEV

- Not all interesting things are problems
- Not all interesting things are known ahead of time
  … or express themselves as anomalies
- Not all problems manifest as exceptions

OPS DEV

- How to build those features / fix those bugs
- How features and fixes are scoped
- How to verify correctness or completion
- How to roll out that feature or fix

- How's our load? Is it spread reasonably evenly across our Kafka partitions?

- Did latency increase in our API server? Is our new /batch endpoint performing well?

- How did those recent memory optimizations affect our query-serving capacity?

- How's our load? Are **high-volume customers** spread reasonably evenly across our Kafka partitions?
- Did latency increase in our API server? **Which customers benefit most** from our new /batch endpoint?
- How did those recent memory optimizations affect our query-serving capacity for **customers with string-heavy payloads**?

OPS DEV

- Tests aren’t enough
- Benchmarks aren’t enough
- Exceptions aren’t enough

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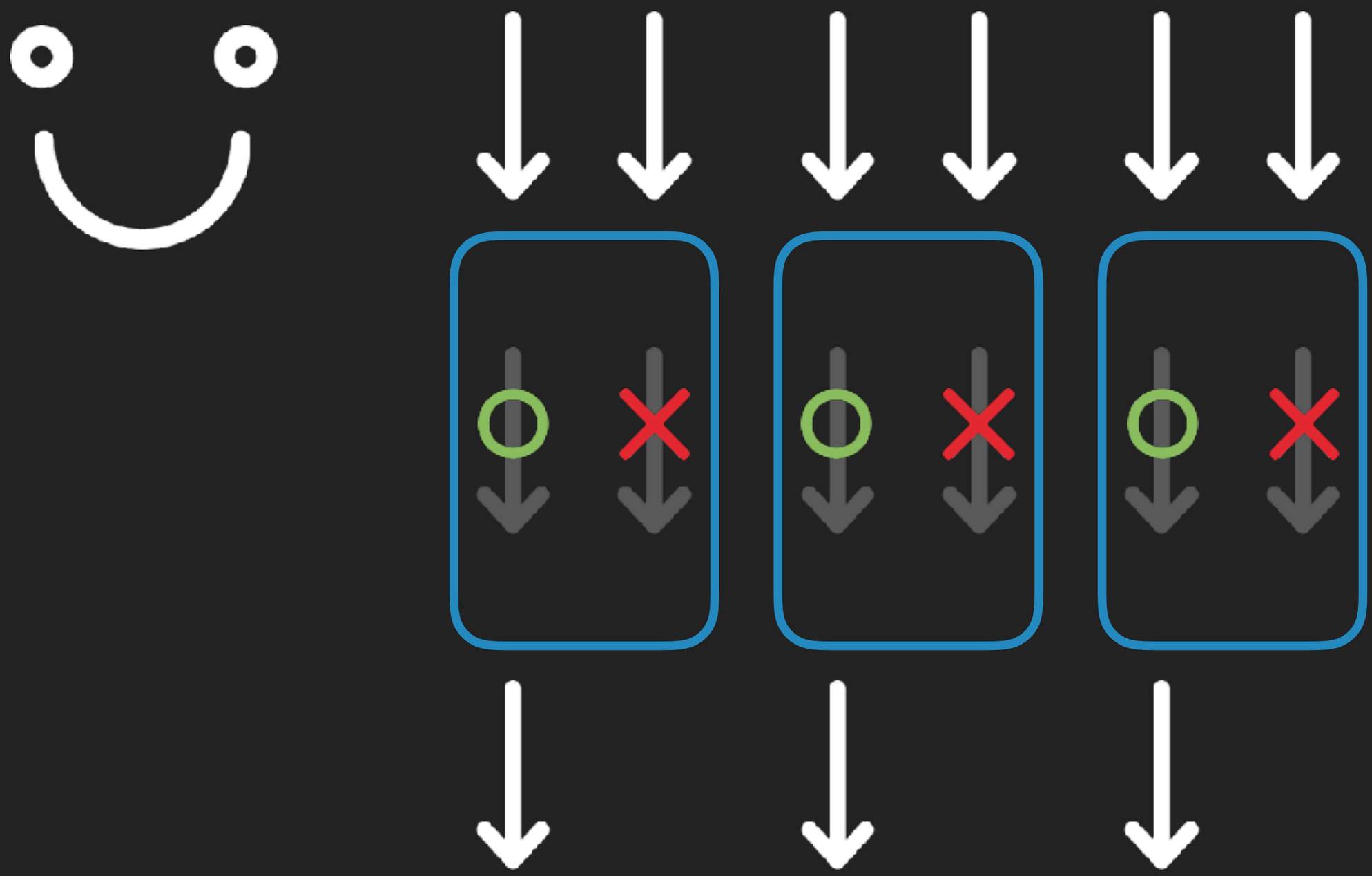
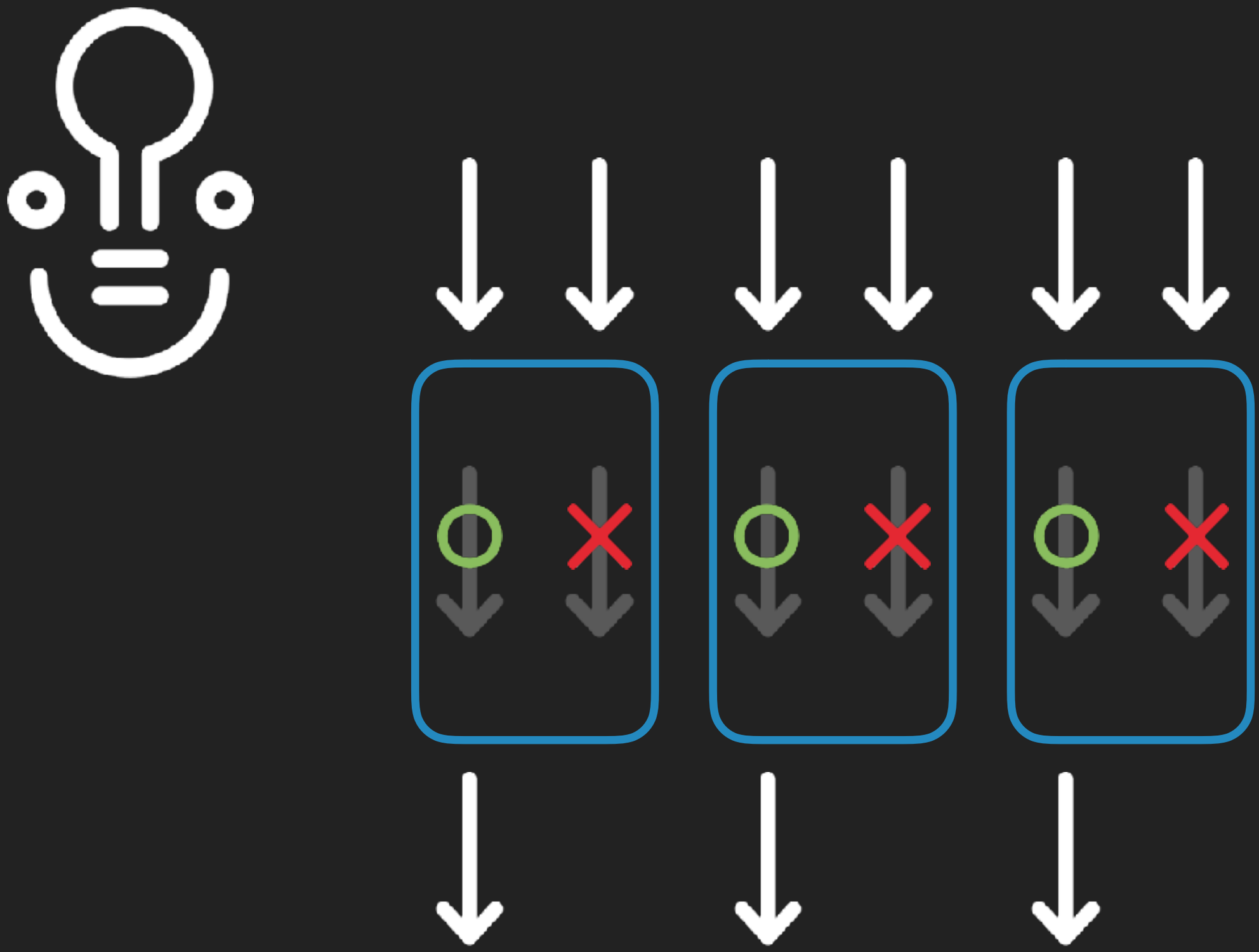
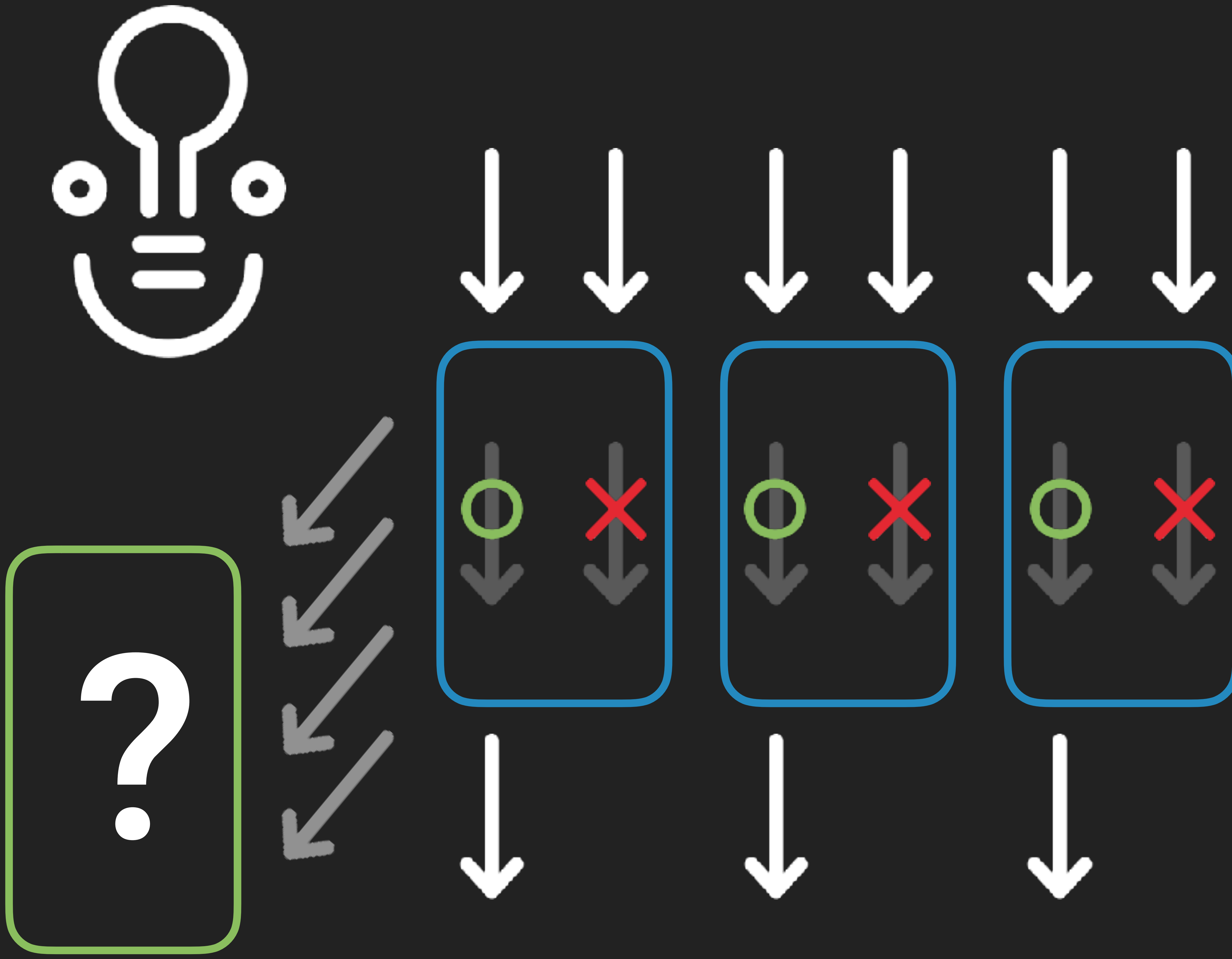
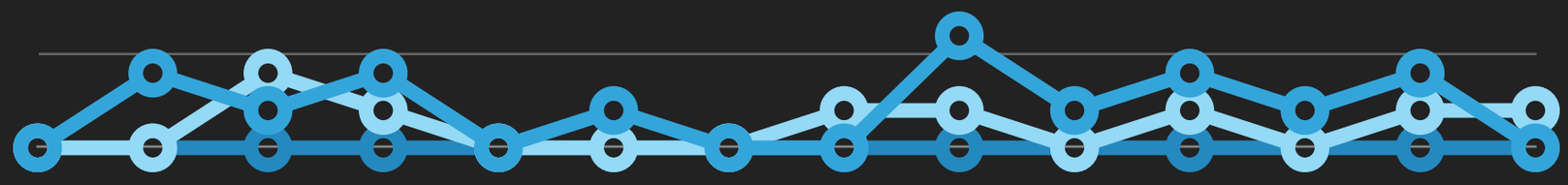


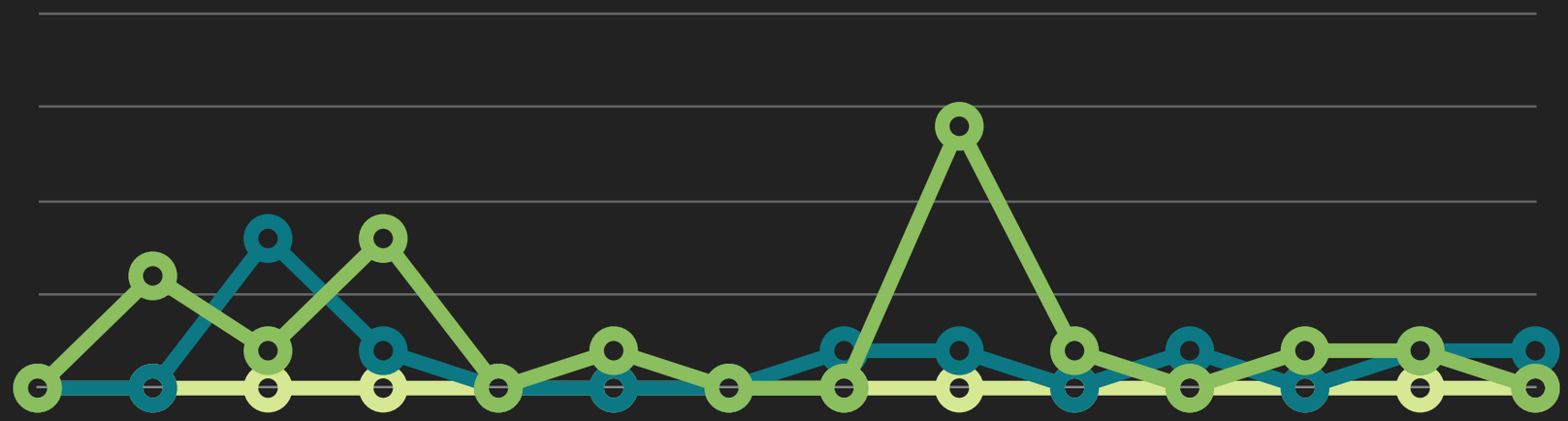




DID HIT RATE LIMIT



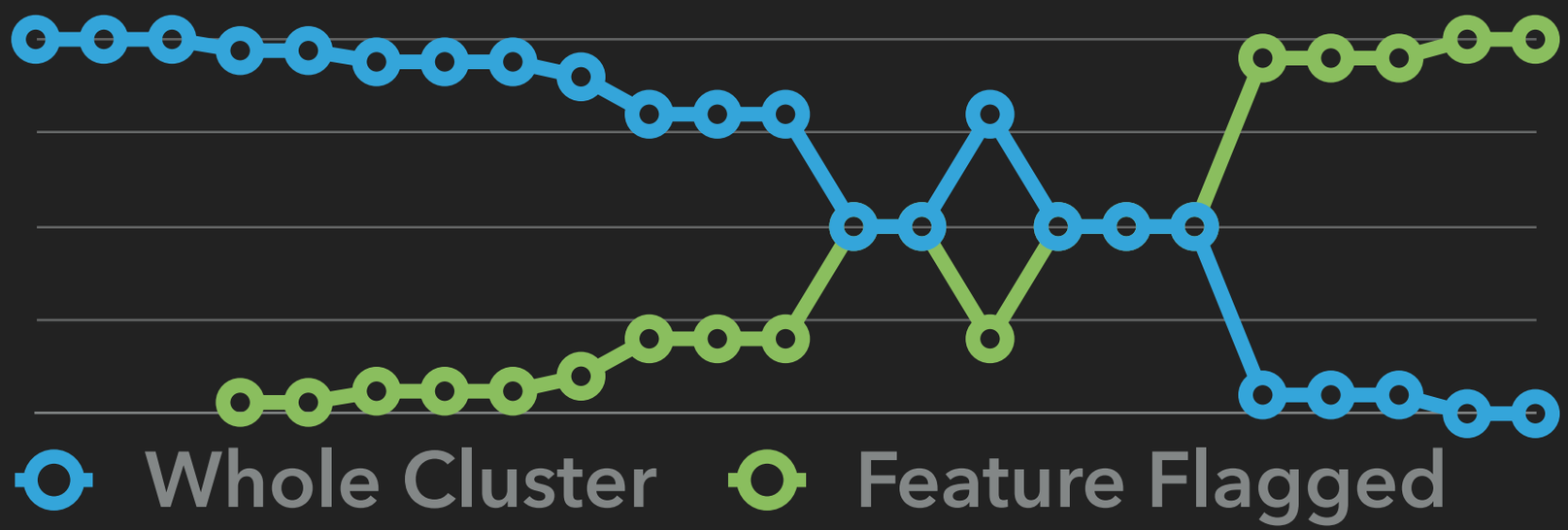
WOULD HAVE HIT RATE LIMIT



“WORKS ON MY MACHINE”

WRITE LATENCY

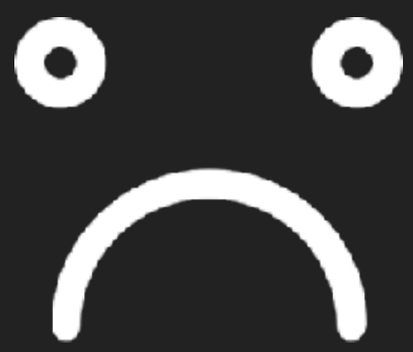
REQUEST VOLUME



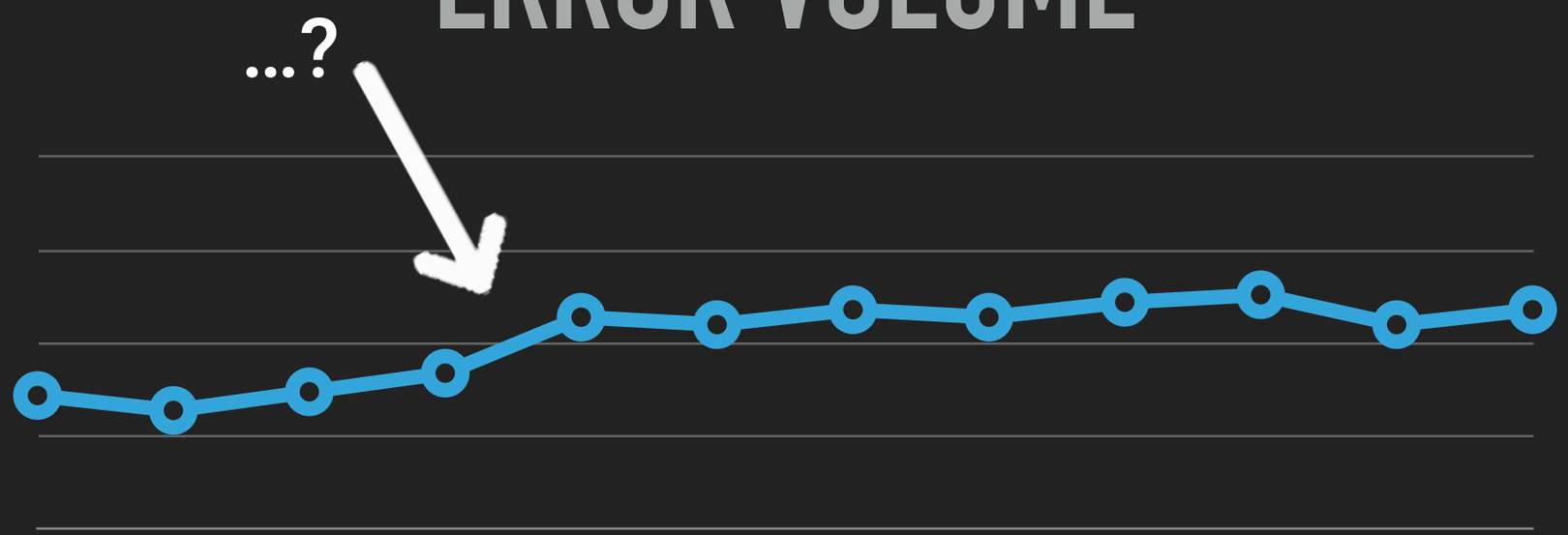
“WHERE (WHEN) DID IT COME FROM?”

2a328fae a477ce0c f9c5b04d bffe6e3c

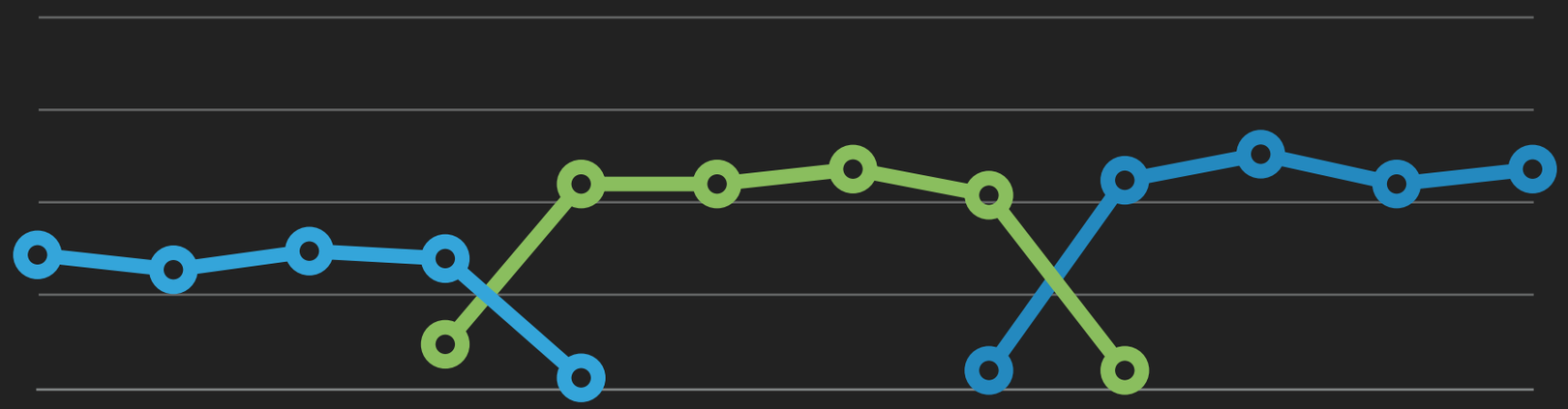
0893bfe0 00568f50 daa1114f 20d81e88 3f0c5054



ERROR VOLUME



ERROR VOLUME, BY BUILD



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DEV

- Test in production (with feature flags)
- Identify outliers in dev terms, not ops terms
- Explore prod in realtime

OPS DEV

- Form hypotheses about what their code will do in production
- Add/tweak instrumentation as necessary
- Query data to (in)validate hypotheses
- Take action (and repeat as necessary)

TAKING THE FIRST FEW STEPS 

- Start at the edge with basic, common attributes (e.g. HTTP)

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- Business-relevant or infrastructure-specific characteristics (e.g. customer ID, DB replica set)
- Temporary additional fields for validating hypotheses
- Prune stale fields (if necessary)

SOME BEST PRACTICES

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- Contextual, structured data
- Common set of nouns and consistent naming
- Don't be dogmatic; let the use case dictate the ingest pattern
  - e.g. instrumenting individual reads while batching writes

AN EXAMPLE SCHEMA EVOLUTION

first pass:

- server_hostname
- method
- url
- build_id
- remote_addr
- request_id
- status
- x_forwarded_for
- error
- event_time
- team_id
- payload_size
- sample_rate

then we added:

- dropped
- get_schema_dur_ms
- protobuf_encoding_dur_ms
- kafka_write_dur_ms
- request_dur_ms
- json_decoding_dur_ms +others

a couple of days later, we added:

- offset
- kafka_topic
- chosen_partition

AN EXAMPLE SCHEMA EVOLUTION

first pass:

- server_hostname
- method
- url
- build_id
- num_goroutines
- remote_addr
- request_id
- status
- x_forwarded_for
- error
- event_time
- team_id
- payload_size
- sample_rate

after that:

- memory_inuse

a week after that:

- warning
- drop_reason

then we added:

- dropped
- get_schema_dur_ms
- protobuf_encoding_dur_ms
- kafka_write_dur_ms
- request_dur_ms
- json_decoding_dur_ms +others

a couple of days later, we added:

- offset
- kafka_topic
- chosen_partition

and on and on, adding 2-3 fields every couple of weeks:

- user_agent
- unknown_columns
- dataset_partitions
- dataset_id
- dataset_name
- api_version
- create_marker_dur_ms
- marker_id
- nil_value_for_columns
- batch
- gzipped
- batch_datapoint_lens
- batch_num_datasets

DEVS, OUR MISSION:

- Stop writing software based on intuition, start backing it up with data
- Teach observability tools to speak more than "Ops"
- ??? (← ask lots of questions and validate hypotheses)
- Profit!

THANKS! 

@cyen

more stories:
https://honeycomb.io/blog/categories/dogfooding

icons:
https://thenounproject.com/daniele.catalanotto