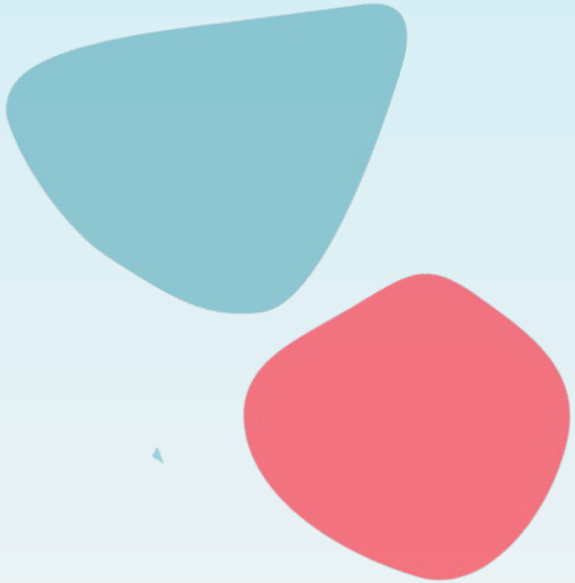
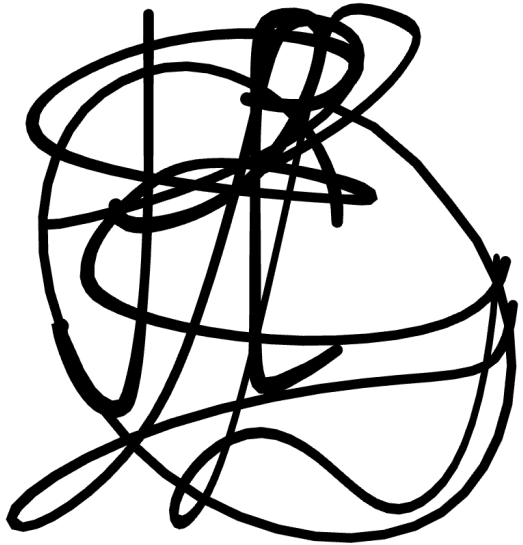
Observability with OTel and Grafana

Nadya Shakhat

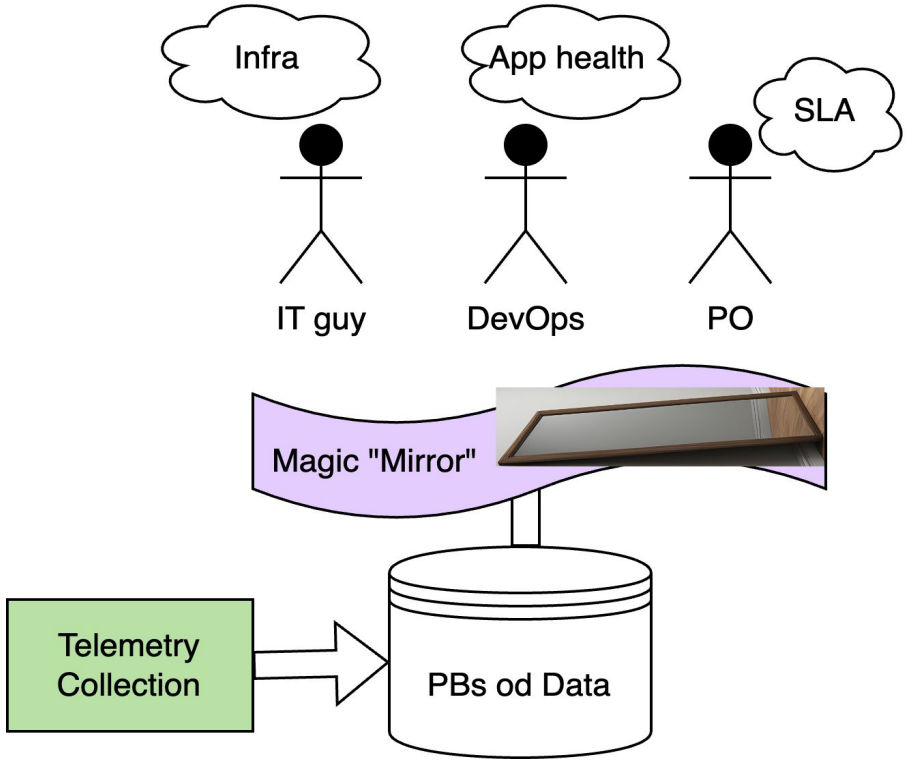


Nordcloud
an IBM Company

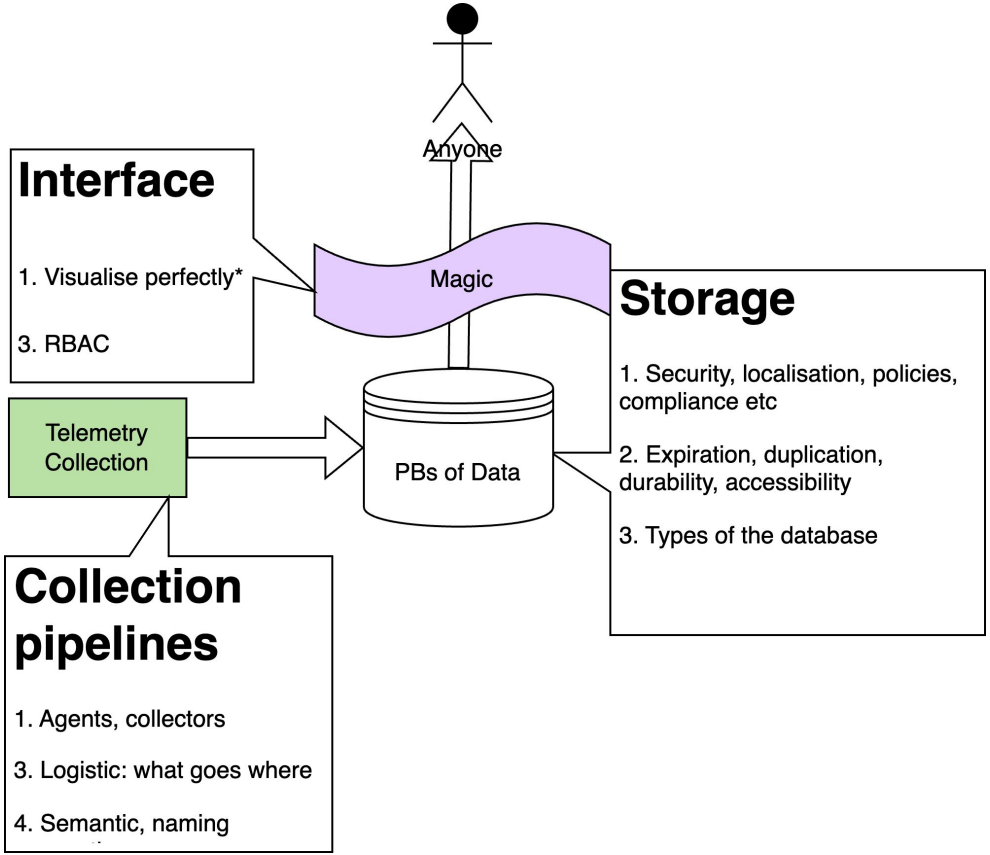


HELLO

Very high level



Little bit lower



OpenTelemetry

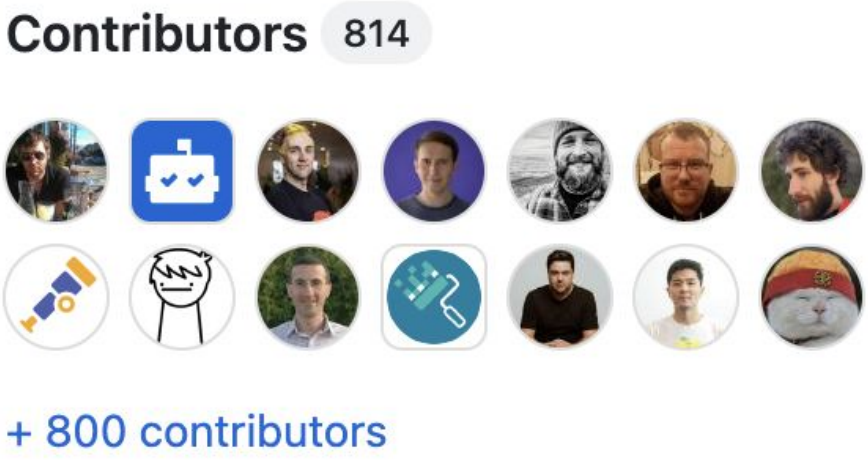
CLOUD NATIVE
COMPUTING FOUNDATION

Key components:

- SDK, API
- Agents/Collectors

Key conceptual components:

- Standardisation
- Semantic conventions
- OTLP protocol



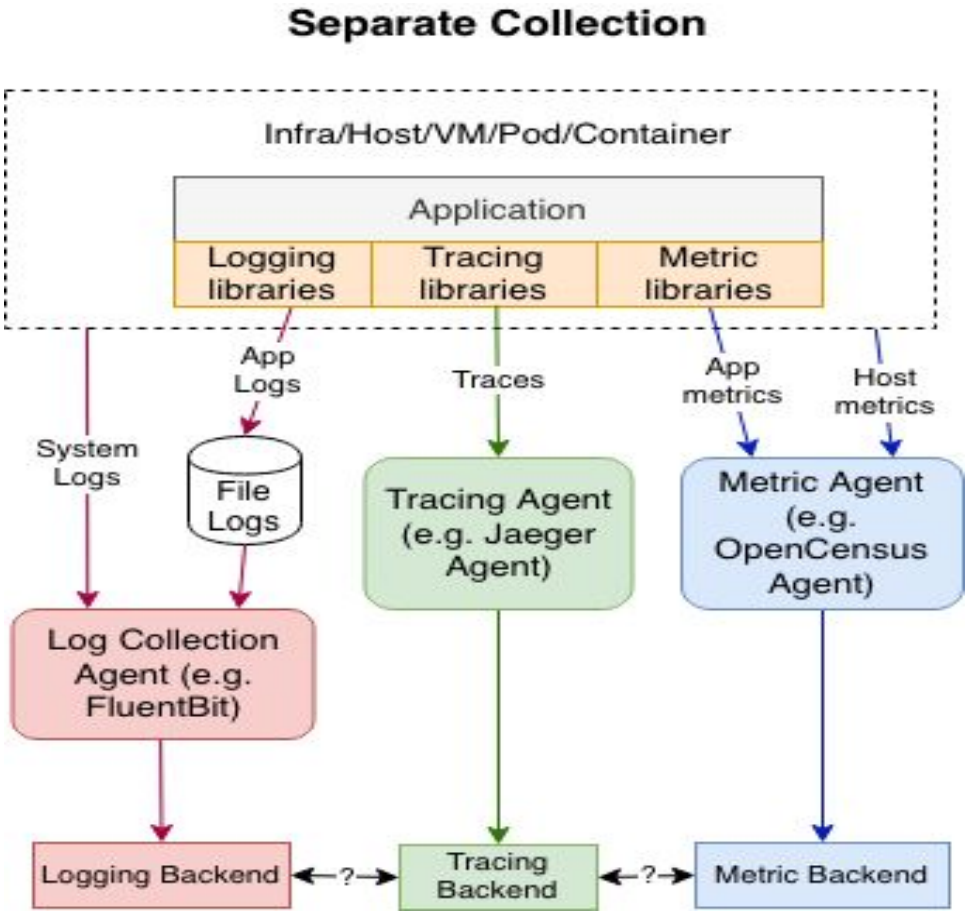
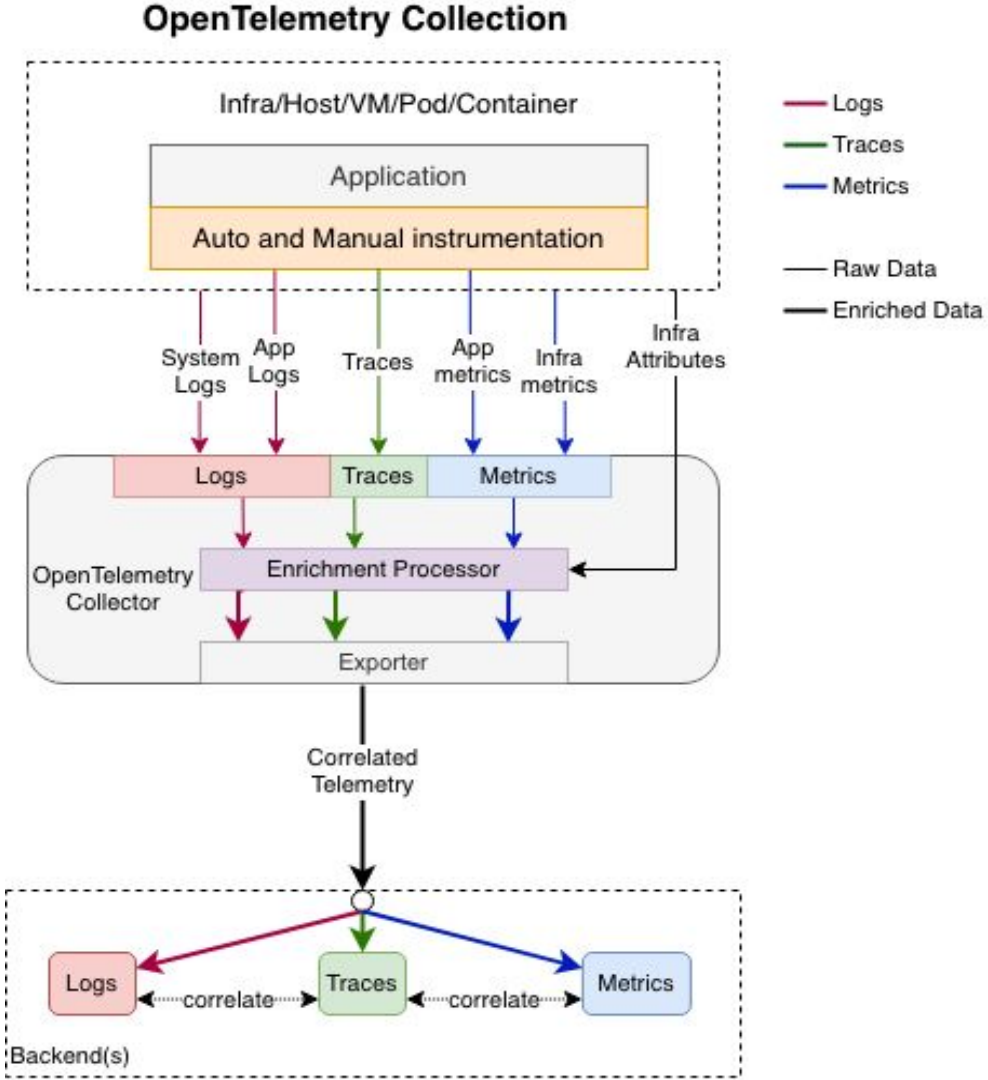


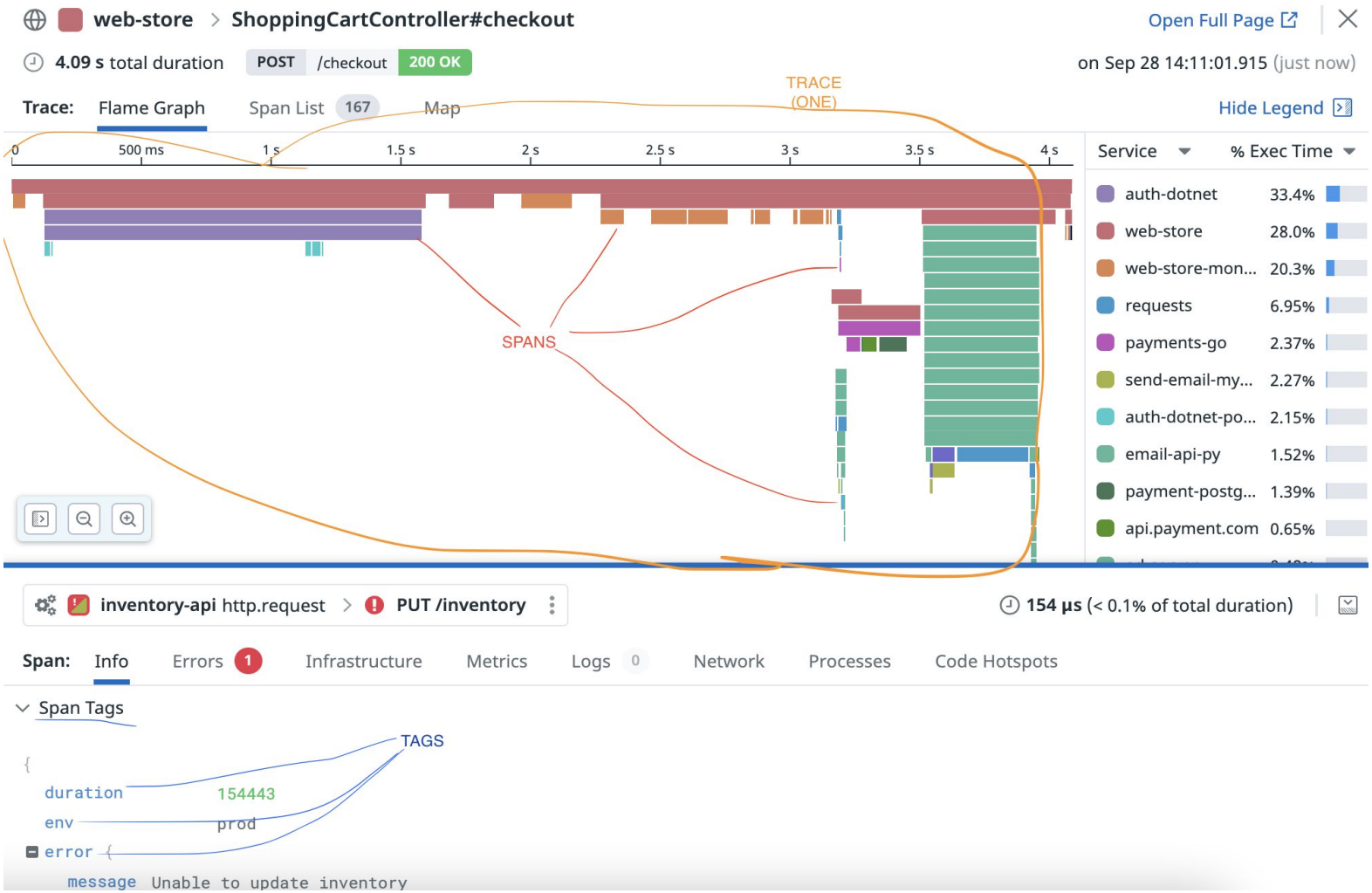
Image from https://opentelemetry.io/docs/specs/otel/logs/img/separate-collection.png



Img source https://opentelemetry.io/docs/specs/otel/logs/img/unified-collection.png

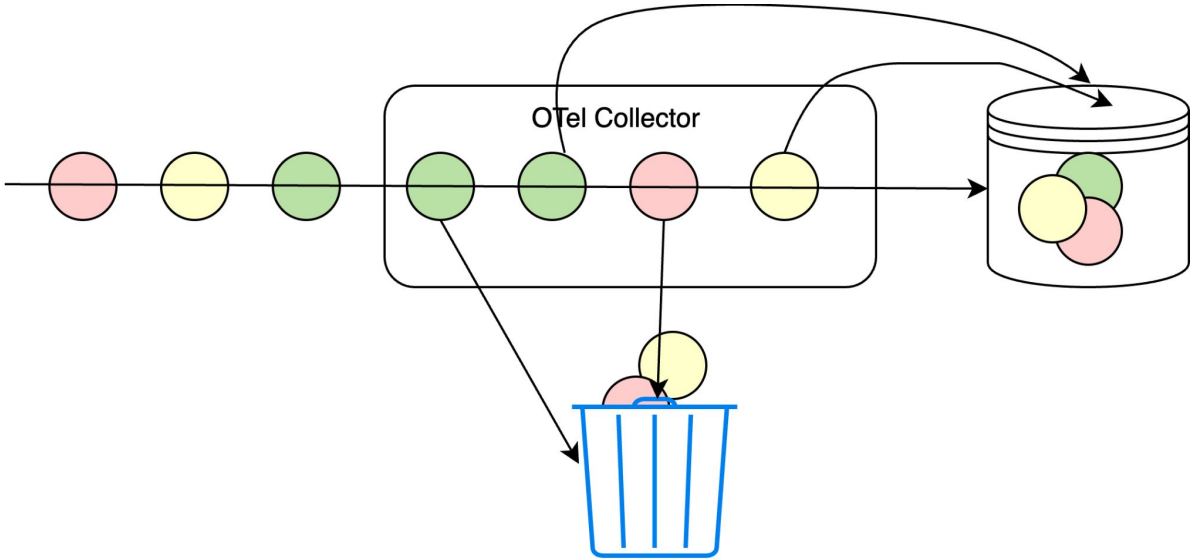
Challenges in OpenTelemetry Adoption

- Protocol Integration and Compatibility
- Scalability and Efficiency
- Complex Configuration Management:
- Minimizing Performance Impact
- Staying Up-to-date with Community Developments


web-store
ShoppingCartController#checkout
Open Full Page
4.09 s total duration
POST
/checkout
200 OK
on Sep 28 14:11:01.915 (just now)
TRACE (ONE)
Trace:
Flame Graph
Span List 167
Map
Hide Legend
0
500 ms
1 s
1.5 s
2 s
2.5 s
3 s
3.5 s
4 s
SPANS
Service
% Exec Time
auth-dotnet 33.4%
web-store 28.0%
web-store-mon... 20.3%
requests 6.95%
payments-go 2.37%
send-email-my... 2.27%
auth-dotnet-po... 2.15%
email-api-py 1.52%
payment-postg... 1.39%
api.payment.com 0.65%
inventory-api http.request
PUT /inventory
154 µs (< 0.1% of total duration)
Span:
Info
Errors 1
Infrastructure
Metrics
Logs 0
Network
Processes
Code Hotspots
Span Tags
TAGS
{
duration 154443
env prod
error {
message Unable to update inventory

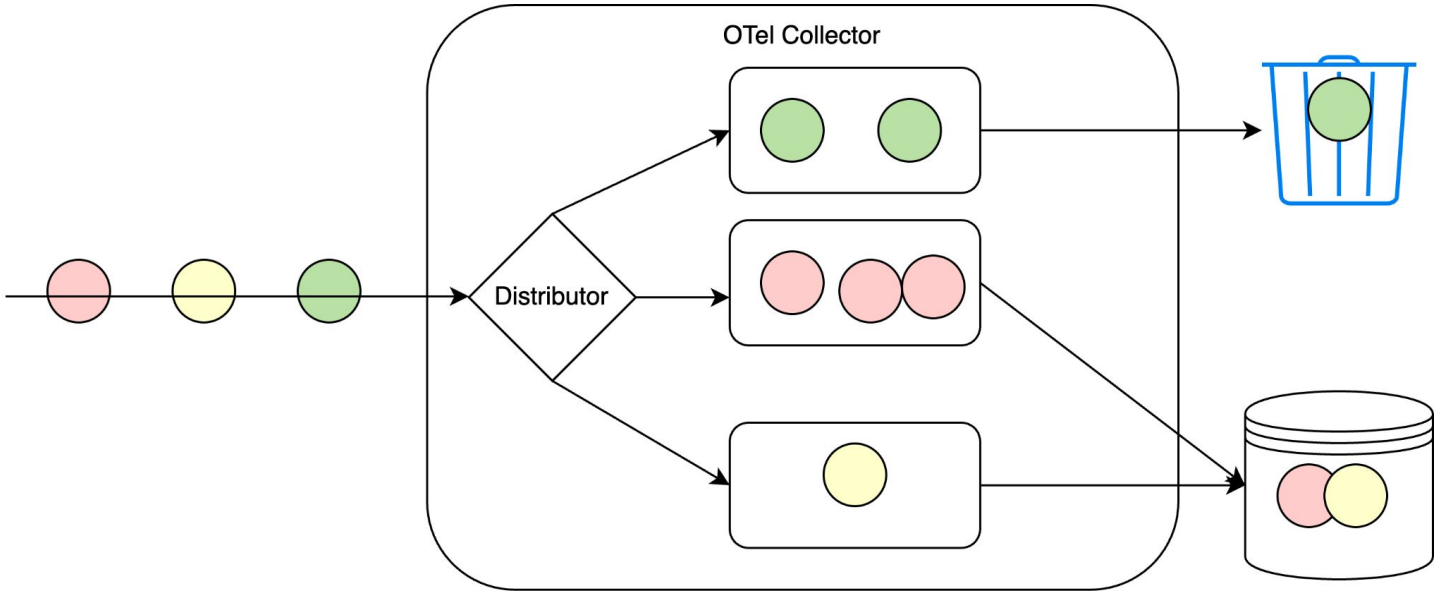
Sampling of traces

HEAD

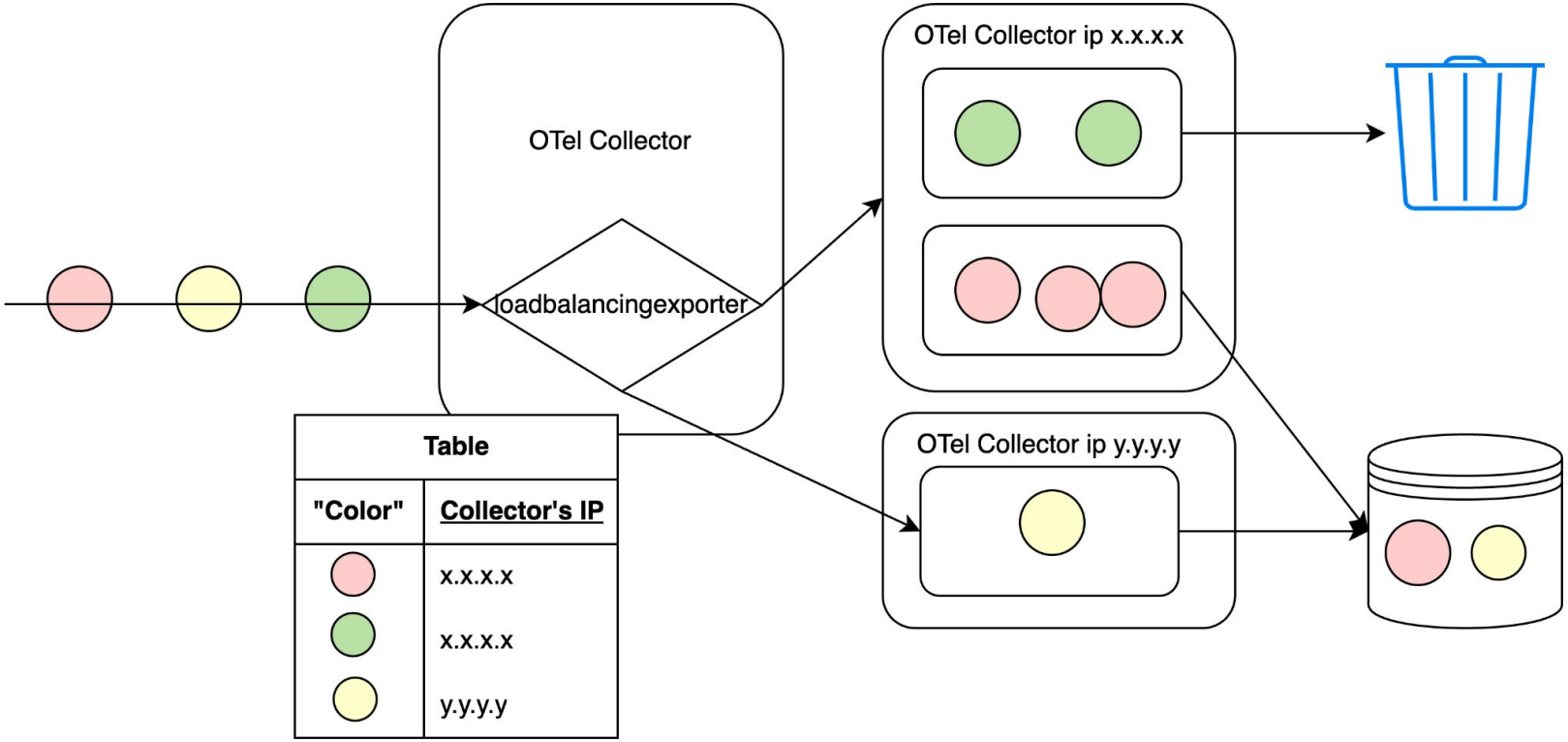


Sampling of traces

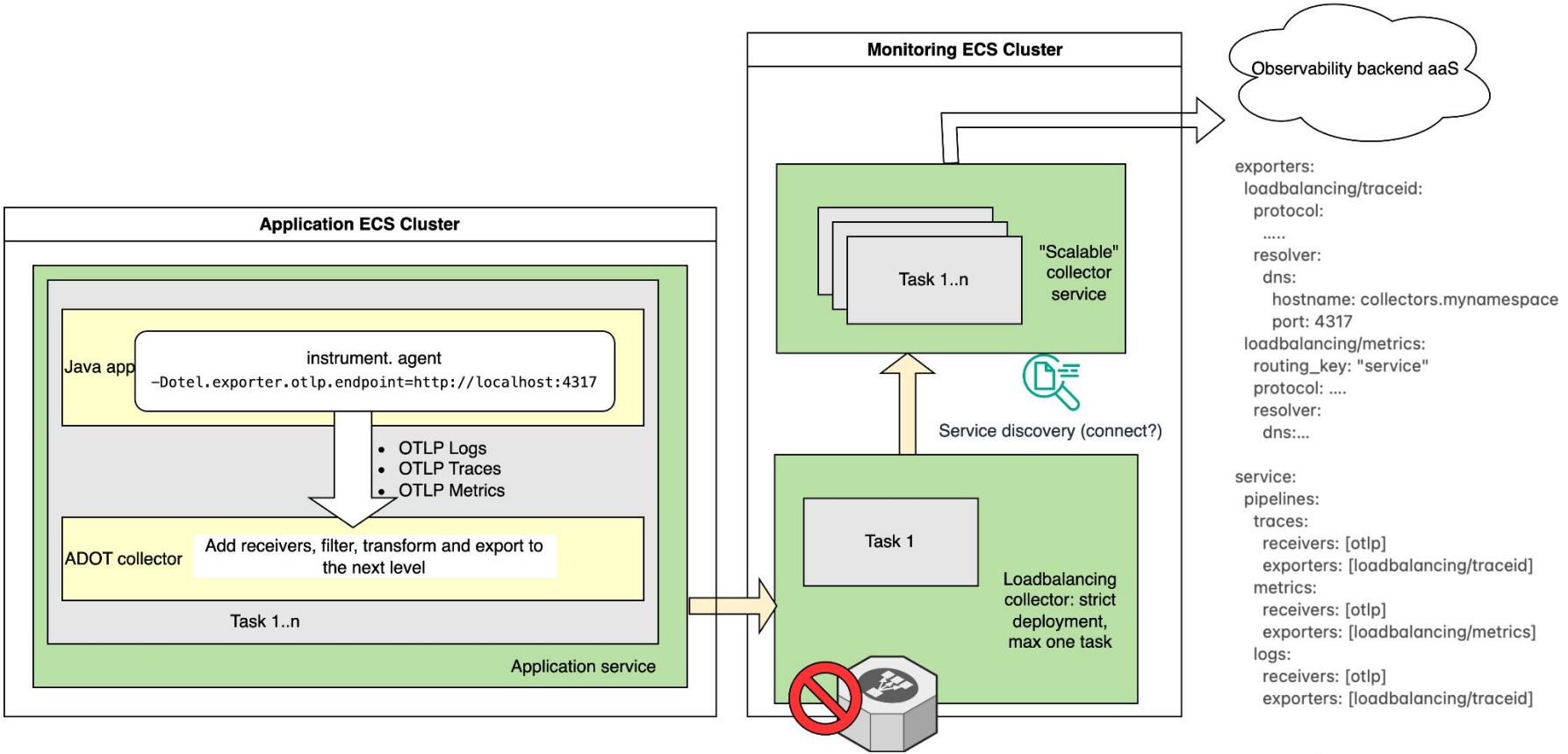
TAIL



OTel solution: loadbalancingexporter



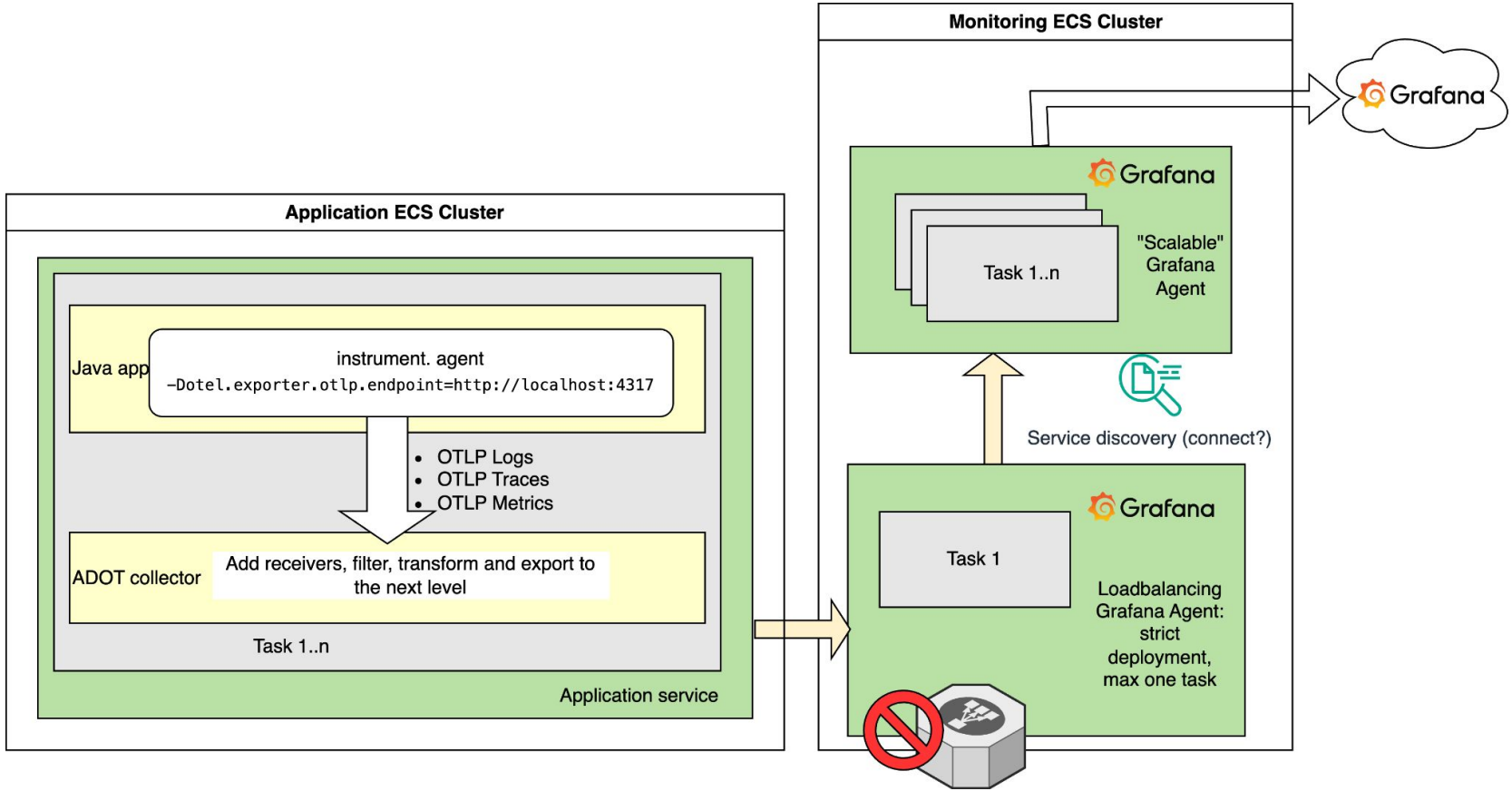
Example architecture




```
exporters:
  loadbalancing/traceid:
    protocol:
      .....
    resolver:
      dns:
        hostname: collectors.mynamespace
        port: 4317
  loadbalancing/metrics:
    routing_key: "service"
    protocol: ....
    resolver:
      dns:...

service:
  pipelines:
    traces:
      receivers: [otlp]
      exporters: [loadbalancing/traceid]
    metrics:
      receivers: [otlp]
      exporters: [loadbalancing/metrics]
    logs:
      receivers: [otlp]
      exporters: [loadbalancing/traceid]
```

Example architecture



ETL vs ELT in Observability

Might **ELT** be achieved with:

Compression
Batching
+ Other sampling and filtering techniques

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