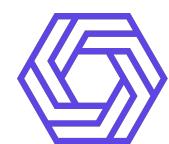


EFFICIENT LOGGING SOLUTIONS WITH OPENTELEMETRY AND CLICKHOUSE

Islam Nurul Yakin
DevOps Engineer @SEVIMA



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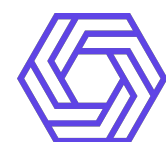
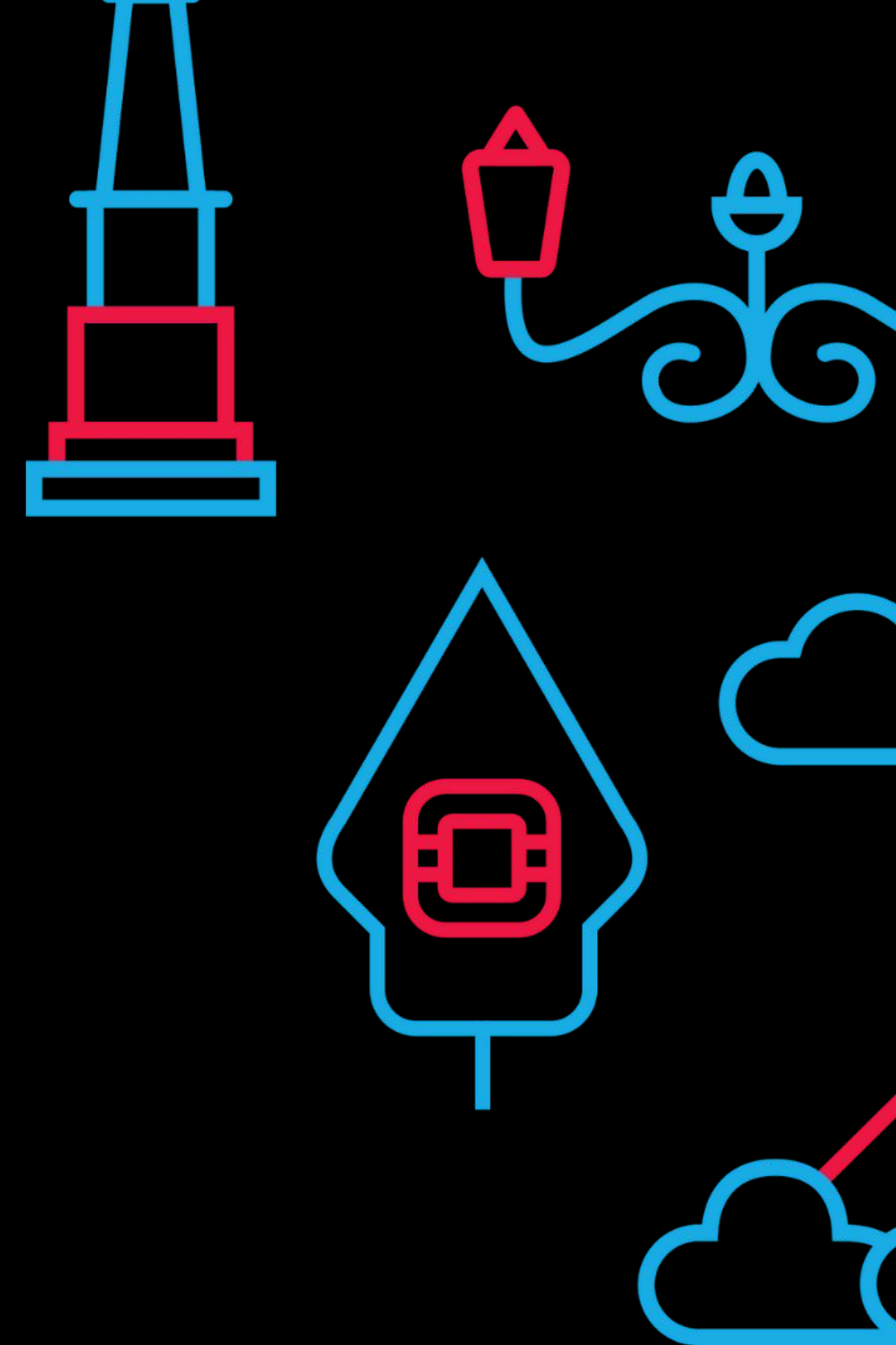
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Kita bakal ngobrolin apa ?

1. Problem yang dihadapi
2. Open Telemetry
3. Clickhouse
4. Demo



sumber: <https://en.wikipedia.org/wiki/File:Clickhouse.png>



sumber: <https://opentelemetry.io/docs/>

Disclaimer:

Pendapat yang diungkapkan sepenuhnya merupakan pendapat pribadi saya dan tidak mencerminkan pandangan atau pendapat perusahaan tempat saya bekerja.

Problem Statement

- Log tidak karuan tersebar diseluruh penjuru
- Setiap kali ada problem, ssh ke server
- Membutuhkan real-time monitoring



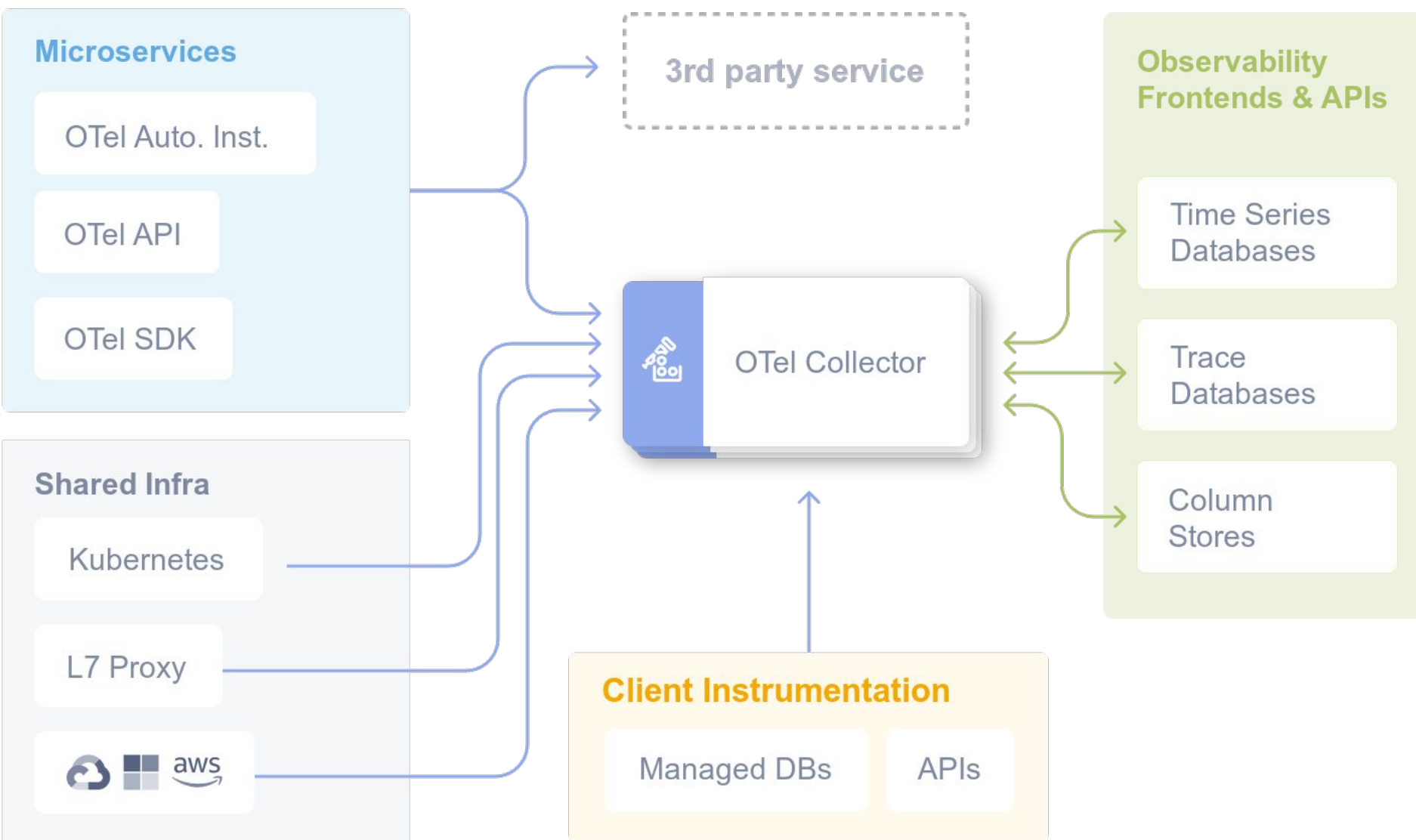
Kenalan dulu sama OpenTelemetry

High-quality, ubiquitous, and portable telemetry to enable effective observability

Dev Ops

Simple nya

otel membantu dev/ops untuk melihat dan mengerti bagaimana aplikasi bekerja, apakah semuanya berjalan lancar, atau ada masalah yang harus diperbaiki. Jadi, otel memberikan "story" tentang apa yang terjadi di dalam aplikasi tersebut.



sumber: <https://opentelemetry.io/docs/>

Jangan lupa kenalan sama ClickHouse

ClickHouse® is a high-performance, column-oriented SQL database management system (DBMS) for online analytical processing (OLAP)

ohh columnar database....

SQL Family

Beginner-friendly

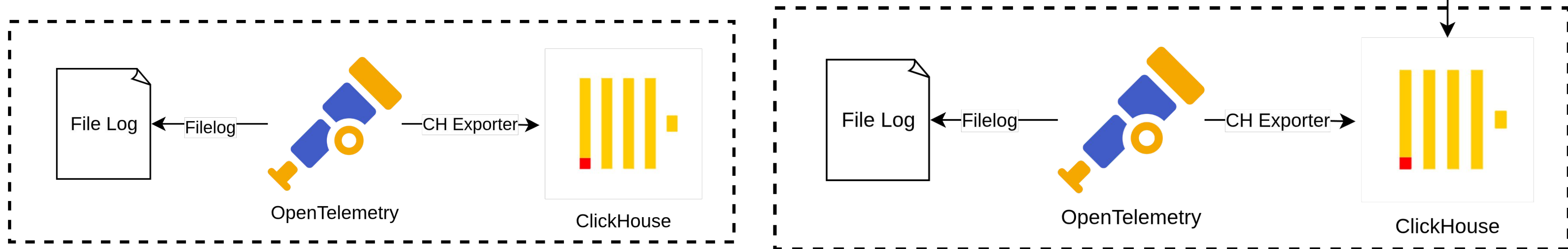


sumber: <https://en.wikipedia.org/wiki/File:Clickhouse.png>

Arsitektur sederhana

Kenapa Menggunakan Otel dan Clickhouse ?

- Open Source & Cost Effective
- No Vendor Lock
- Unified Observability
- Storage compression
- Familiar query language
- Advanced Analytics SQL aggregations, joins, subqueries



Simple oTel config

```
receivers:  
  filelog:  
    include:  
      - /var/log/nginx/access.log  
    start_at: beginning
```

otel mempunyai banyak receivers,
dan bisa lebih dari 1. pada
sample kali ini membaca filelog

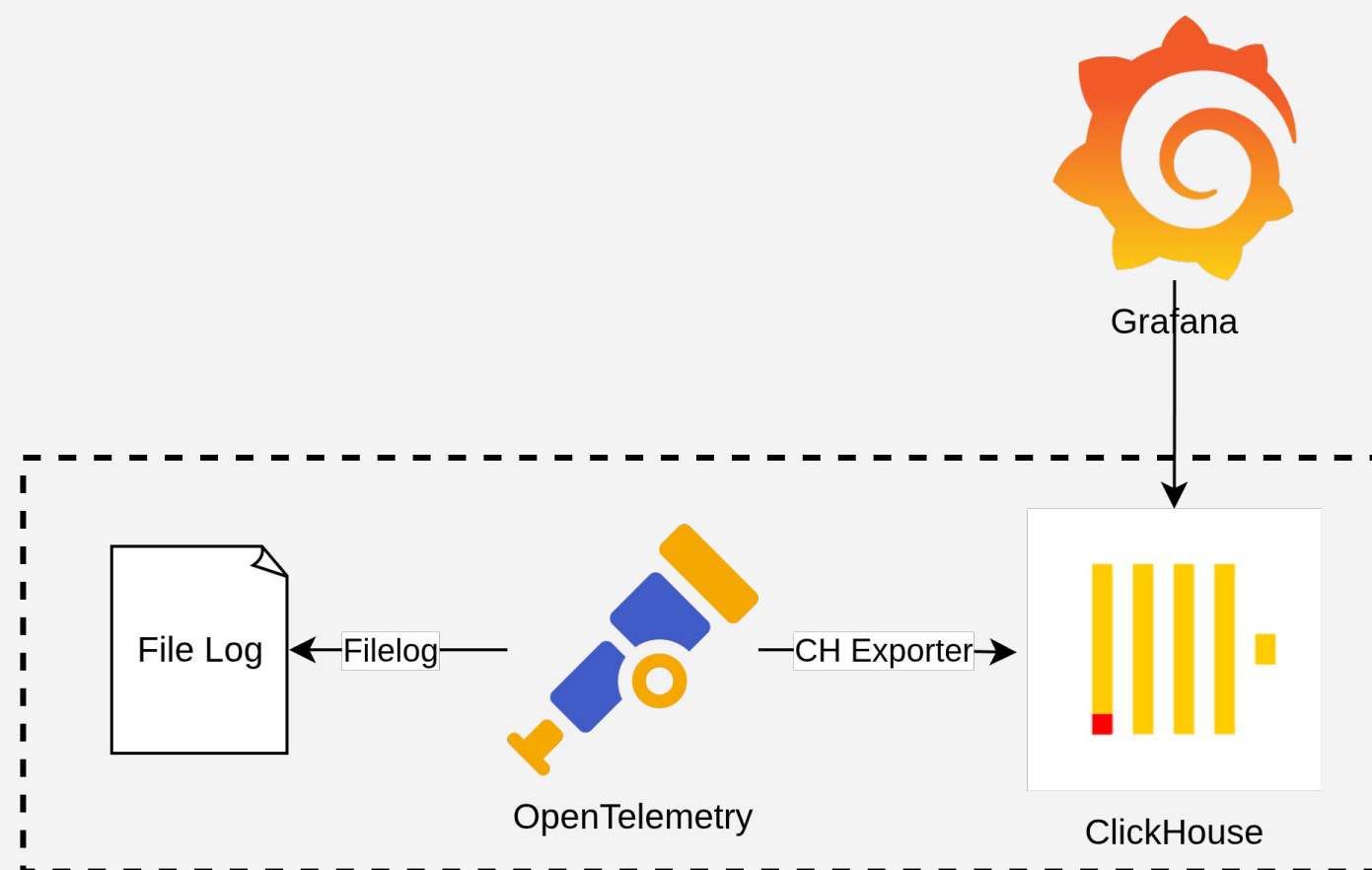
```
resource:  
  attributes:  
    - key: service.name  
      value: inventory  
      action: upsert
```

Transform
Ingin menambahkan label,
example nama services.

```
service:  
  pipelines:  
    logs:  
      receivers: [filelog]  
      processors: [transform, resource, batch]  
      exporters: [clickhouse]
```

Pipelines
mendefinisikan data dari
diproses dari awal hingga
akhir

Clickhouse Pros...



Karena ch = olap dbms, create table lebih advanced, & complex analytics query.

Tapi...

ch tidak begitu Lightweight jika dibanding keluarga LGTM

”

9

Pros

Query Type ⓘ

SQL Editor

Query Builder

Query Type ⓘ

Table

Logs

Time Series

Traces

```
1 SELECT
2   toStartOfHour(Timestamp) as hour,
3   LogAttributes['status'] as status,
4   COUNT(*) as requests,
5   uniq(LogAttributes['remote_addr']) as unique_us
6   avg(toFloat64OrNull(LogAttributes['body_bytes_s
7 FROM otel_logs
8 WHERE Timestamp > now() - INTERVAL 24 HOUR
9 GROUP BY hour, status
10 ORDER BY hour DESC;
```

Complex Analytic Query

```
erityNumber Int32 CODEC(ZSTD(3)),
erviceName LowCardinality(String) CODEC(2
dy String CODEC(ZSTD(3)),
sourceSchemaUrl String CODEC(ZSTD(3)),
sourceAttributes Map(LowCardinality(Stri
opeSchemaUrl String CODEC(ZSTD(3)),
opeName String CODEC(ZSTD(3)),
opeVersion String CODEC(ZSTD(3)),|
opeAttributes Map(LowCardinality(String)
gAttributes Map(LowCardinality(String),
DEX idx_log_attributes_key mapKeys(LogAt
EX idx_log_attributes_value mapValues/
```

Low Cardinality ?

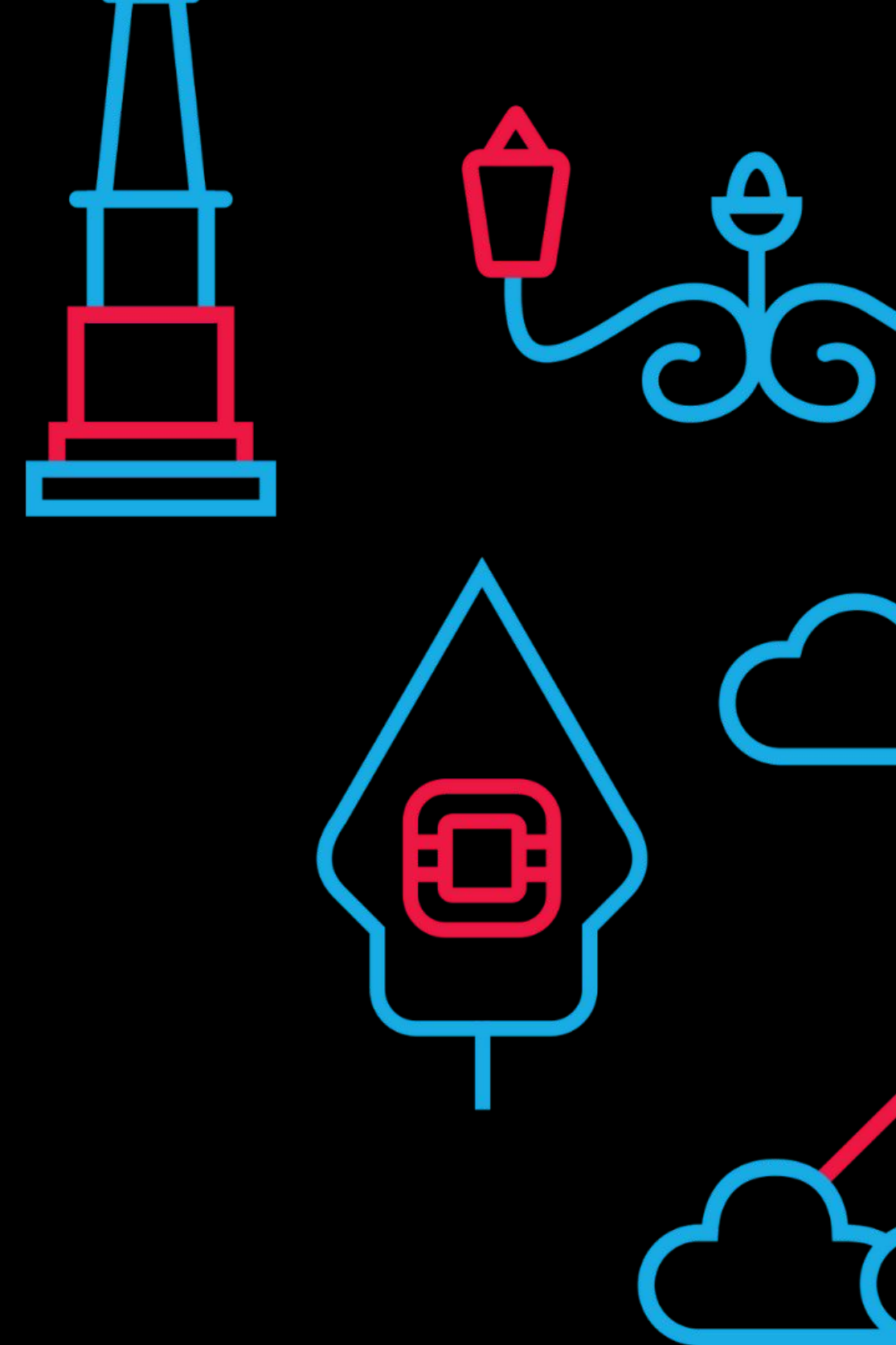
Use Case	OpenTelemetry + ClickHouse	Promtail + Lo
Simple Log Viewing	★★★ Overkill	★★★★★ Perfect
Business Analytics	★★★★★ Excellent	★ Very Limited
Debugging & Troubleshooting	★★★★★ Good	★★★★★ Excellent
Cost (Storage)	★★★★★ Very Low	★★★ Medium
Setup Complexity	★★ Complex	★★★★★ Sim
Query Performance	★★★★★ Excellent	★★★★ Good
Scalability	★★★★★ Petabyte	★★★★★ Ter

simple log viewing?

Yu Demo Yu

[Github](#)

THANK YOU



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