



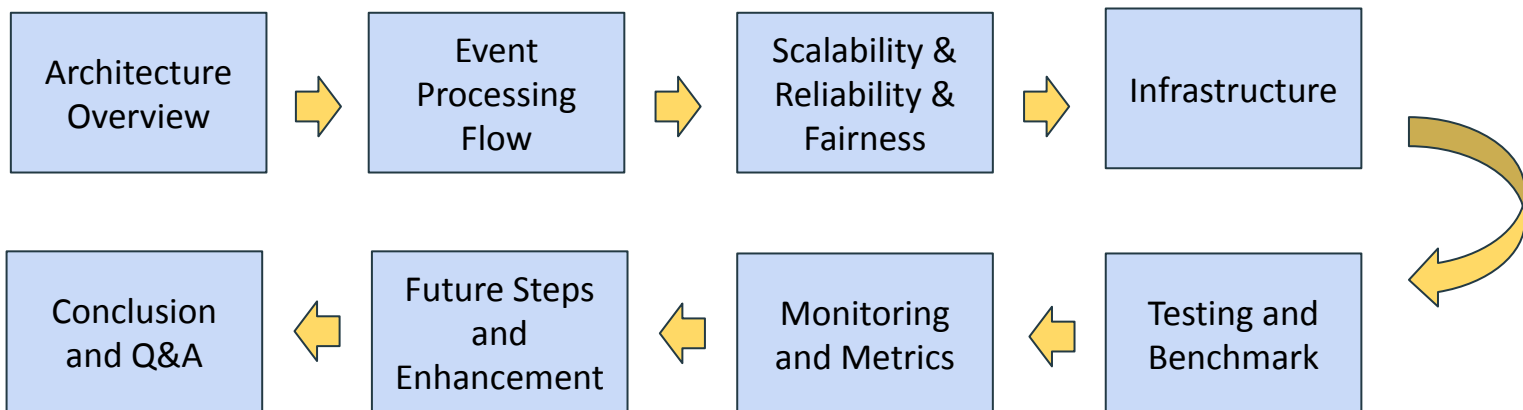
# Webhook Notifier Event Processing Solution

Scalability - Reliability - Fairness

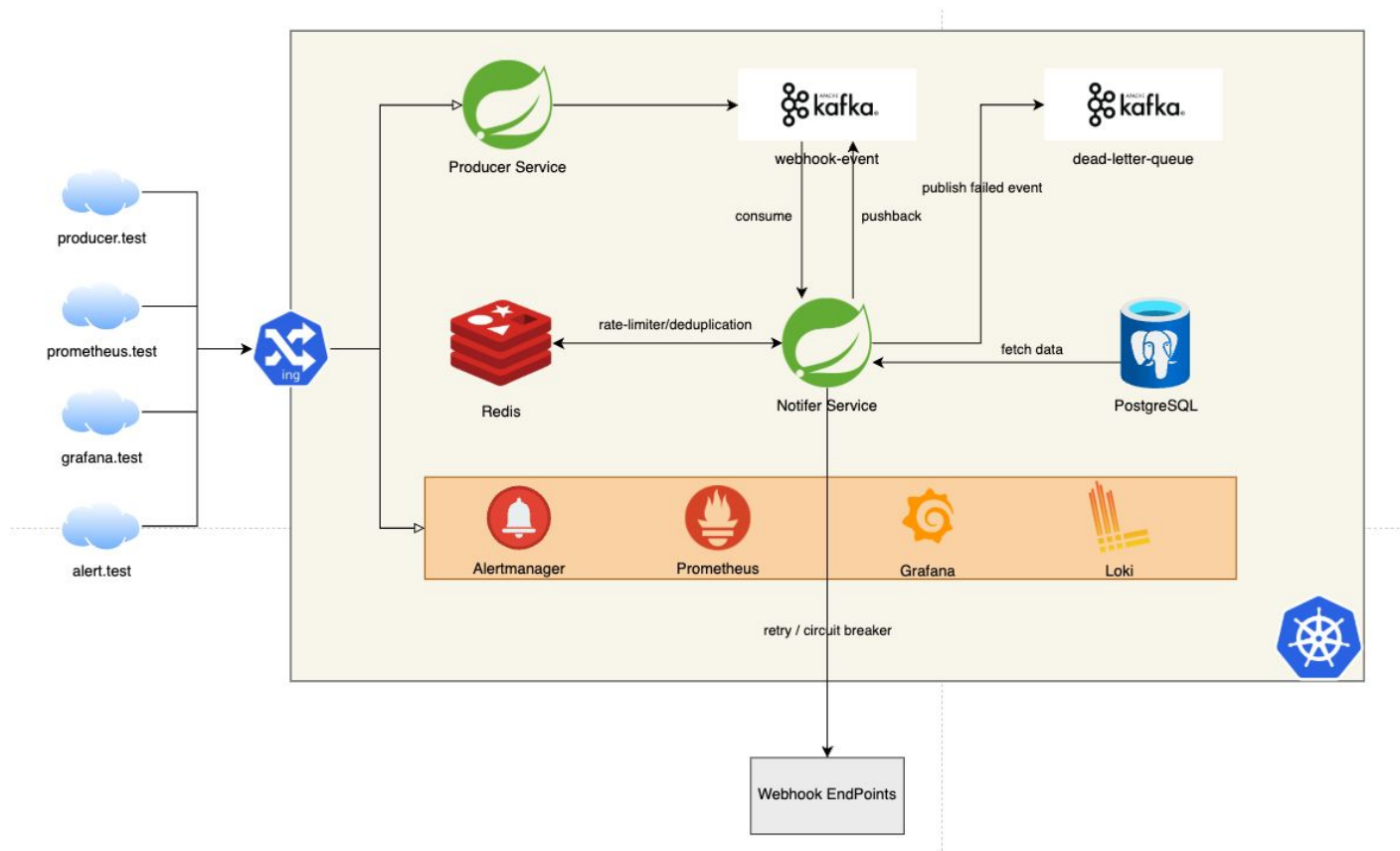


# Introduction to Webhook Notifier Event Processing

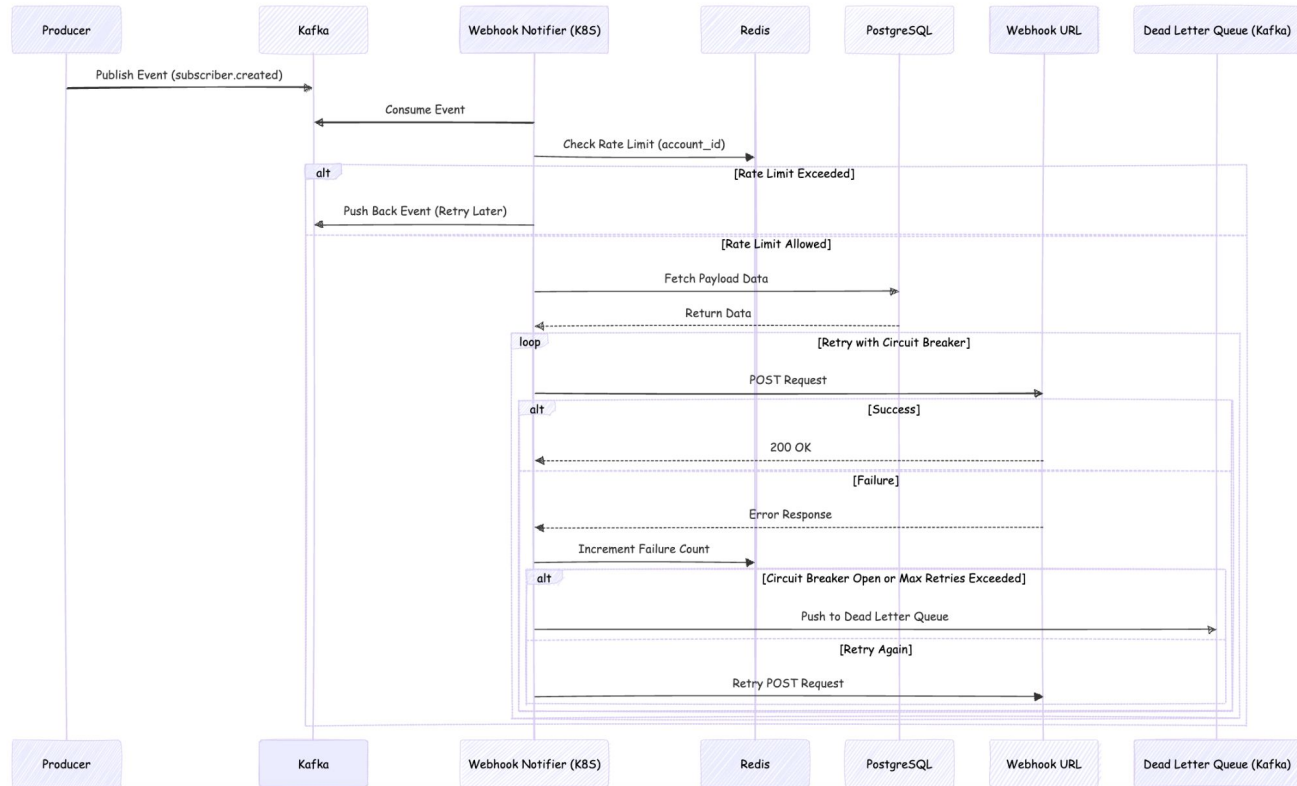
The Webhook Notifier solution is designed to handle an impressive **1 billion events per month**. It emphasizes **scalability**, **reliability**, and **fairness**, making it a robust choice for event processing.



# Architecture Overview

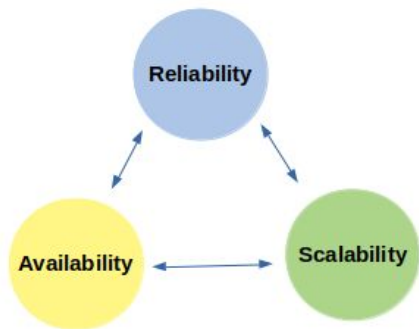


# Event Processing Flow



# Scalability & Reliability

- **Retries:** For failed webhook calls.
- **Circuit Breaker:** Prevent cascading failures.
- **Dead Letter Queue:** For handling failures effectively.
- **Message Broker:** Prevent lost event with manual ack in Kafka Consumer.



# Fairness

- **Deduplication:** Managed by Redis to ensure unique events.
- **Rate Limiting:** Events are re-queued if exceed limit.

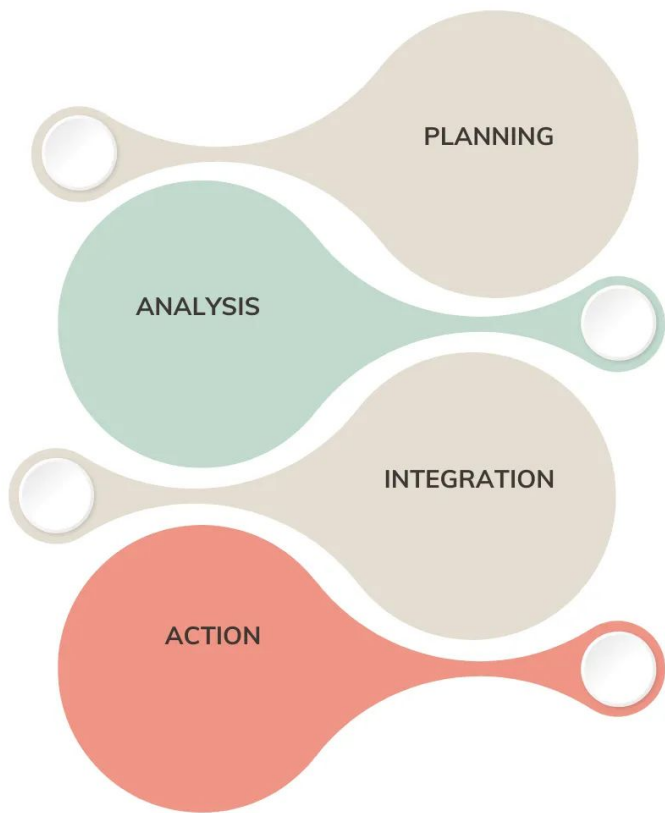




# Infrastructure

Our infrastructure is built on:

- **Kubernetes with Helm and Docker Hub:**  
For deployment.
- **Components:** Producer, Consumer, Kafka, Redis, PostgreSQL.
- **Monitoring Tools:** Loki, Grafana, Prometheus.
- **Configuration:** Kafka throughput, Redis latency, and Kubernetes auto-scaling.



# Testing and Benchmark

- **Unit Tests:** Provide partial coverage.
- 
- **Test Data:** Generated using Python and CSV files.
  - **Performance Testing:** Conducted with JMeter, sending 10000 events.
  - **Results:** Initial tests are OK, throughput of approximately 70 events/second per an instance (0.25 vCPU, 500 MB Ram).
  - **Target:** Achieve 1 billion events per month.

# Monitoring and Metrics

**kafka.batch.processing.time**

Key metric for monitoring batch processing time.

**webhook.execution/success/failure**

Metric for tracking success and failure rates of webhook executions.

**circuit.open**

Metric indicating when the circuit is open.

**kafka.event.count**

Metric for monitoring pod scaling and resource utilization



# Future Steps and Enhancements



Looking ahead, we plan to:

- Deploy on AWS cloud.
- Setup CI/CD.
- Optimize processing by fine-tuning config.
- Handle rate limiter per vendor/account.
- Optimize event data fetching.
- Add service to DLQ handling.

# Conclusion, Demo and Q&A

In summary, the Webhook Notifier is a powerful solution capable of processing 1 billion events per month with a focus on scalability, reliability and fairness. Feel free to ask any questions or discussions to further explore this exciting project!

