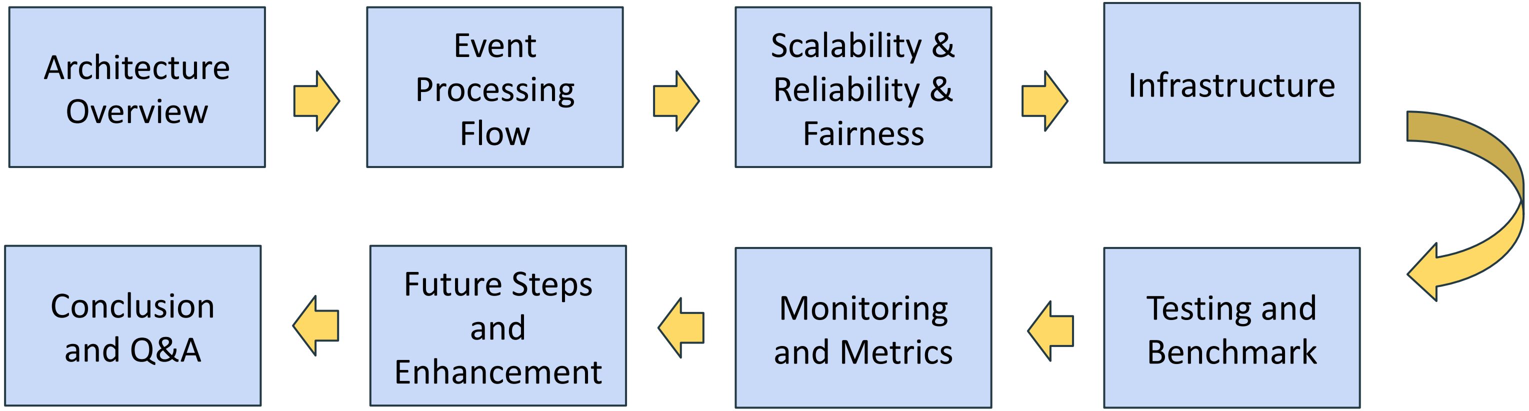
Webhook Notifier Event Processing Solution

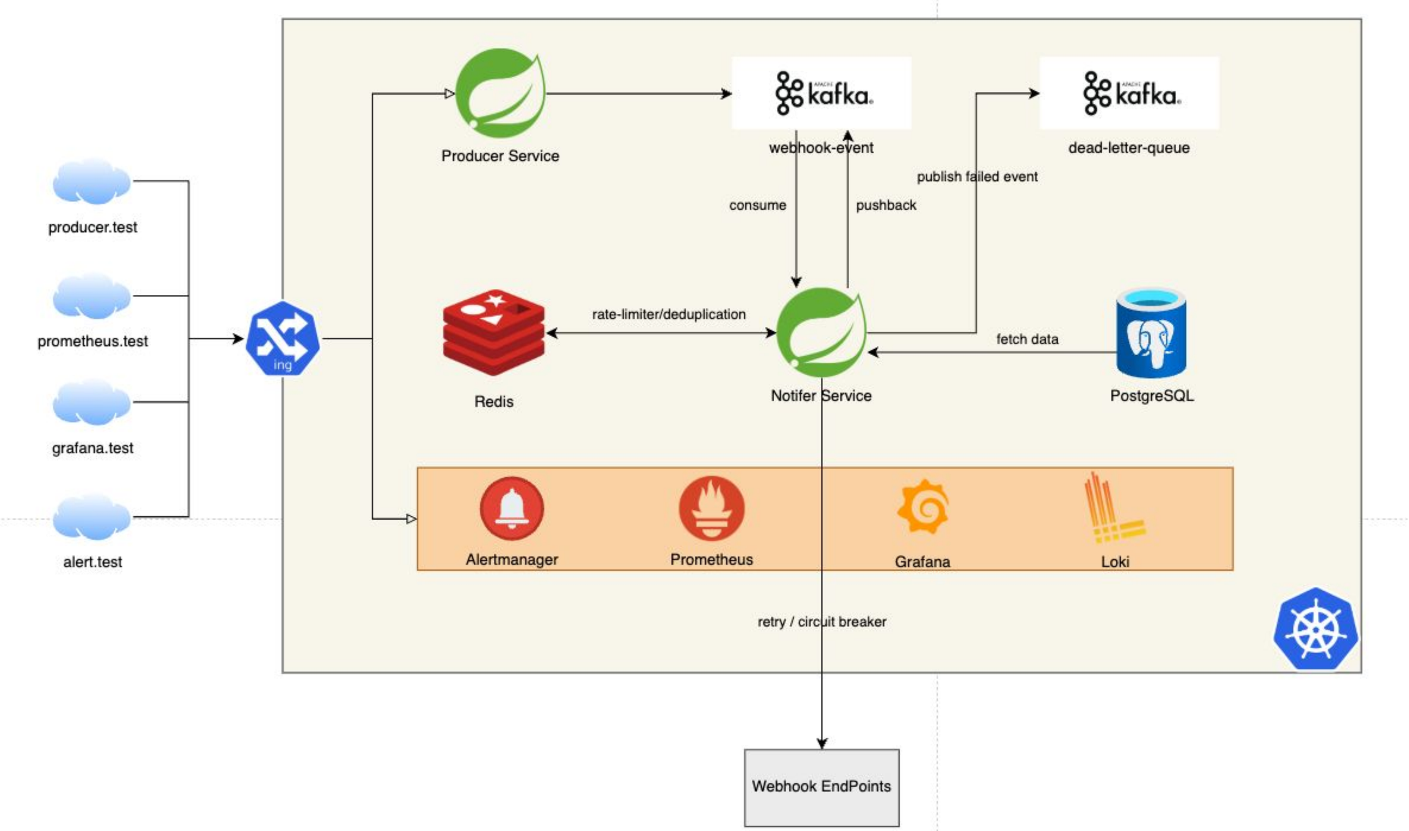
Scalability - Reliability - Fairness

Introduction to Webhook Notifier Event Processing

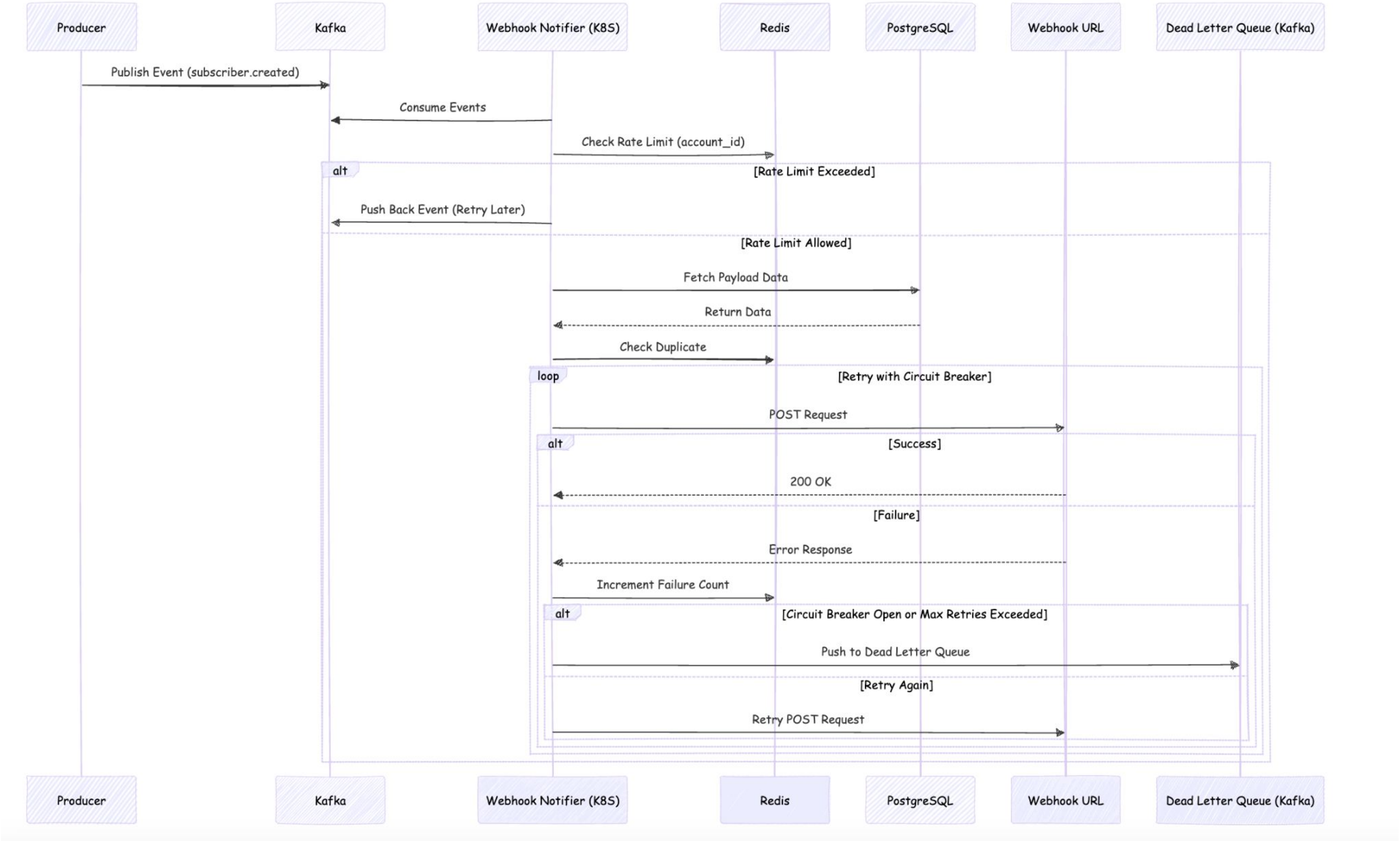
The Webhook Notifier solution is designed to handle an impressive **1 billion events per month**. It emphasizes **scalability**, **reliability**, and **fairness**, making it a robust choice for event processing.



Architecture Overview

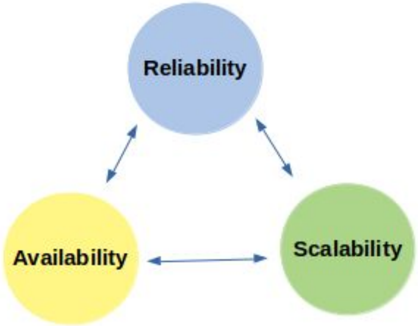


Event Processing Flow



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.



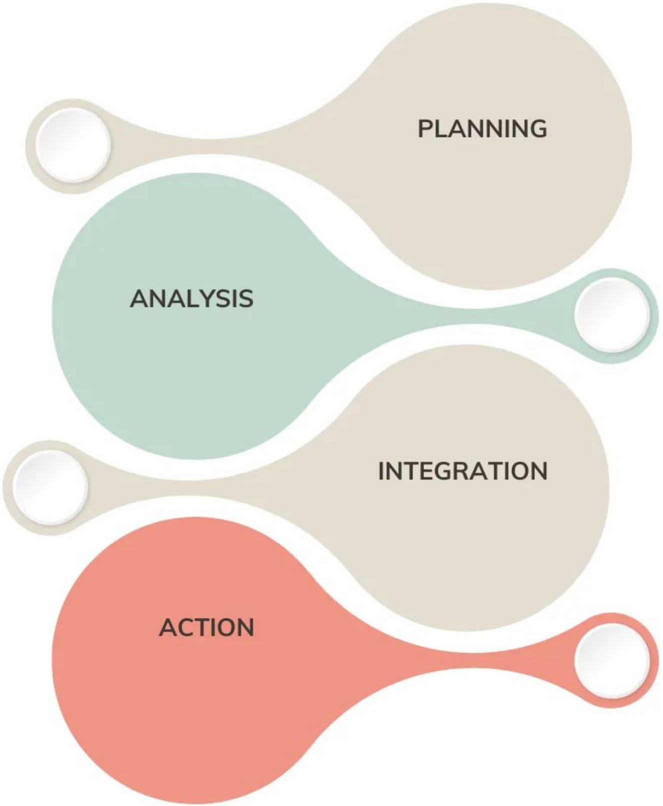
Fairness

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

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, AlertManager.
- **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!