## KuBench: A Kubernetes-Based Environment for Standardized REST API Framework Performance Evaluation

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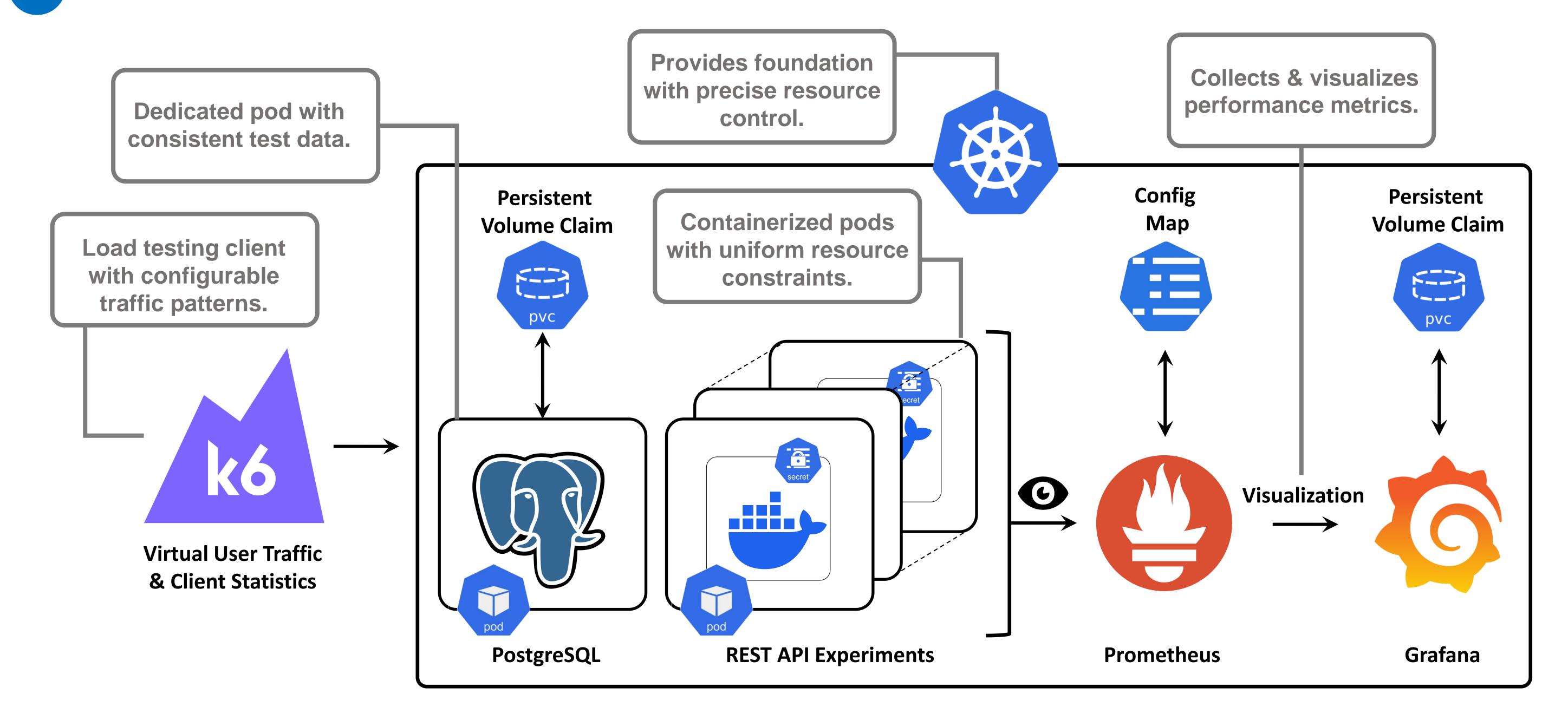
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1 KuBench

KuBench revolutionizes REST API framework selection by enabling direct comparison of multiple implementations across different languages under identical conditions. Our Kubernetes-based solution delivers comprehensive performance metrics that existing single-implementation tools cannot provide, empowering teams to make framework decisions based on genuine performance requirements rather than assumptions.



2 KuBench Architecture



Consistency

Fair comparison of REST API frameworks under controlled conditions.



Containerized approach prevents cross-contamination.

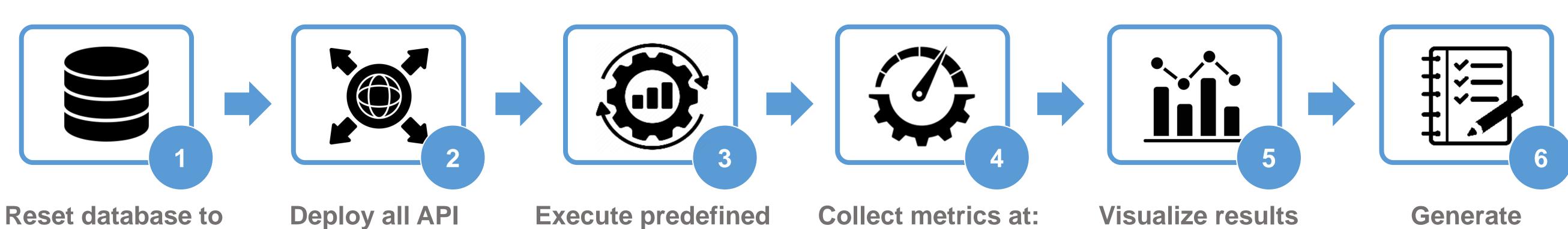
## Reproducibility

Tests can be reliably reproduced across infrastructures.



Modular design allows easy integration of additional frameworks.

3 Testing Methodology



Reset database to default state to ensure consistent initial conditions.

Deploy all API implementations with identical configurations.

Execute predefined test scenarios with k6 load generator.

API-level
System-level
Database-level

Visualize results through Grafana dashboards.

comparative reports.

4 How to Use It?

Implement required REST API endpoints

Add Prometheuscompatible
metrics

Containerize the implementation

Update Kubernetes manifests Configure Prometheus monitoring

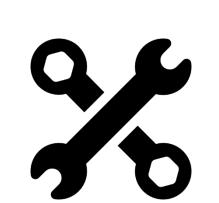
Prepare Grafana visualization

Configure load testing scenarios

5 Future Work



Multiple database instances for concurrent test execution



Simplified configuration process



Distributed deployment scenarios for microservice architectures



Automated analysis tools for performance bottleneck identification

