

Exploring Cloud Native Tools for Performance Measurement and Observability

Suryansh Sahay [202251137] & Ayush Yadav [202252308] & Shiv Chavda [202251124] & M. Ram Bhumeswar [202251073]

Indian Institute of Information Technology, Vadodara

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Outline

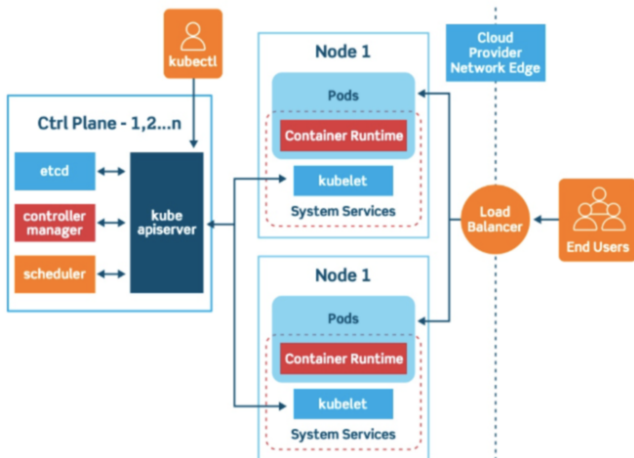
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Overview

- Objective: Explore cloud-native tools for optimizing performance and observability.
- Importance: Real-time insights into system health are essential for modern applications.
- Key Tools: Kubernetes, Prometheus, Grafana.

Kubernetes Overview

- Container orchestration platform.
- Features: Auto-scaling, resource monitoring, and self-healing.
- Tools: Horizontal Pod Autoscaler, Metrics Server.

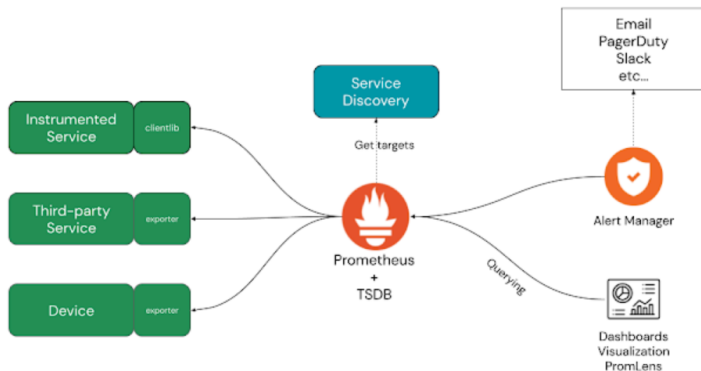


Kubernetes in Observability

- Monitors and scales application workloads.
- Exposes metrics through APIs for tools like Prometheus.
- Supports detailed logging and debugging.

Prometheus Overview

- Open-source monitoring and alerting toolkit.
- Collects and stores metrics as time-series data.
- Powerful query language (PromQL) for analysis.

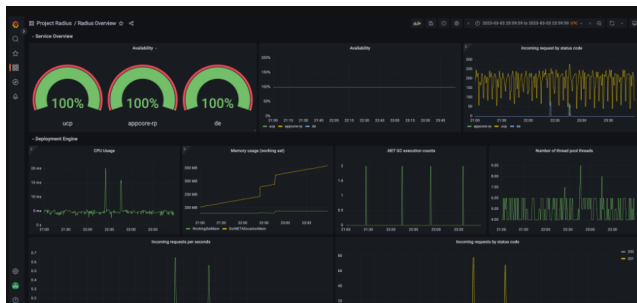


Prometheus in Observability

- Integrates seamlessly with Kubernetes for metrics collection.
- Configurable alerting rules for system health.
- Supports custom exporters for additional metrics.

Grafana Overview

- Open-source platform for monitoring and observability dashboards.
- Connects to multiple data sources like Prometheus, Elasticsearch.
- Provides visualizations and alerting.

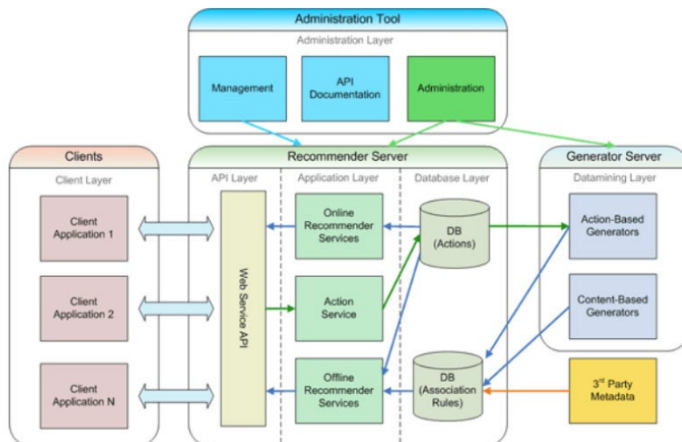


Grafana in Observability

- Real-time dashboards for system performance.
- Centralized visualization of logs, metrics, and traces.
- Collaboration features for teams.

Workflow

- 1 Deploy applications on Kubernetes.
- 2 Use Prometheus for metrics collection and alerting.
- 3 Visualize data with Grafana dashboards.



Common Challenges

- Complex configurations.
- Resource overhead.
- Learning curve for team members.

Proposed Solutions

- Use Helm charts for simplified deployments.
- Optimize resource allocation for monitoring tools.
- Provide team workshops and tutorials.

Summary

- Kubernetes, Prometheus, and Grafana enable effective performance measurement and observability.
- Integration provides a robust solution for modern cloud-native applications.
- Future trends in AI and edge computing will further enhance these tools.

Thank you!