Observability Monitoring of Operating System

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Abstract: *In modern distributed systems, maintaining high availability and performance requires robust observability and monitoring solutions. This project focuses on implementing an **Observability Monitoring System** using **Prometheus** and **Grafana** to collect, store, visualize, and analyze system metrics in real time. **Prometheus**, an open-source monitoring tool, is used for metrics collection and alerting, while **Grafana** provides an intuitive dashboard for visualizing the collected data. The project enables real-time monitoring of system health, resource utilization, and application performance, helping to detect anomalies and optimize system efficiency. Additionally, alerting mechanisms are integrated to notify administrators of critical issues. This solution enhances system observability, leading to proactive issue resolution and improved reliability of applications and infrastructure. In modern cloud-native and distributed systems, **observability** plays a crucial role in ensuring application performance, reliability, and security. This project focuses on developing an **Observability Monitoring System** using **Prometheus** and **Grafana** to enable real-time monitoring of system performance, resource utilization, and application health. **Prometheus**, an open-source monitoring and alerting toolkit, is used for collecting and storing time-series metrics. It retrieves data via a pull-based mechanism using exporters, making it highly efficient for monitoring microservices, containers, and cloud infrastructure. **Grafana**, a powerful visualization tool, is integrated to create interactive and user-friendly dashboards, allowing system administrators to analyze trends, detect anomalies, and make data-driven decisions.*

Keywords: Prometheus, Grafana, Node exporter