Assignment Monitoring system

Your company is expanding rapidly and has several online services and applications. As the company grows, it becomes increasingly important to monitor the health and performance of these systems in real-time. Your task is to design a monitoring system that provides visibility into the health and performance of all online services and applications.

Requirements:

1. The monitoring system must be able to track the following metrics:
   * CPU and memory usage
   * Network traffic
   * Application performance
   * System uptime and availability
   * Error rates
2. The monitoring system should be able to send alerts to relevant stakeholders (e.g. developers, system administrators) in case of a service or application failure, high error rates, or other critical issues.
3. The monitoring system should have a user-friendly dashboard that displays real-time metrics and performance data.
4. The monitoring system should be able to store historical data for analysis and trend analysis.
5. The monitoring system should be scalable and able to handle increasing amounts of data as the company grows.

Questions to ask:

1. What are the most important metrics to track for each online service and application?
2. Who are the relevant stakeholders that need to receive alerts in case of critical issues?
3. What are the different types of alerts that need to be sent (e.g. email, SMS, Slack notification)?
4. What is the expected uptime and availability for each online service and application?
5. How much historical data needs to be stored for trend analysis?
6. How many concurrent users does the monitoring system need to support?
7. How frequently should the monitoring system collect data?

Solution:

As an architect designing the monitoring system, you should consider using a combination of open-source and proprietary tools to meet the requirements. For example, you could use Prometheus, Grafana, and Alertmanager to collect, store, and visualize metrics, as well as send alerts to relevant stakeholders. You could also consider using Elasticsearch and Kibana for log aggregation and analysis.

To ensure scalability and high availability, you could deploy the monitoring system using containerization technology such as Docker and Kubernetes. Additionally, you could use cloud-based services such as AWS CloudWatch or Azure Monitor for monitoring cloud resources.

When designing the user-friendly dashboard, you should consider the needs of different stakeholders and create customized dashboards to display relevant metrics and performance data. You could also consider implementing machine learning algorithms to provide predictive analytics and detect anomalies in real-time.

Overall, the monitoring system should be designed with scalability, high availability, and ease of use in mind, to ensure that it can meet the growing demands of the company's online services and applications.