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Application of Message Brokers (RabbitMQ, Kafka): Performance Analysis and Use Cases

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Abstract: *This article analyzes the capabilities of modern message brokers in the context of event-driven and scalable architectures of distributed systems. It examines the theoretical foundations of message-exchange systems, including pub/sub models, queues, and stream processing, as well as their role in ensuring reliability and flexibility of inter-service communication. Particular attention is given to the comparative characteristics of two widely used brokers: RabbitMQ and Apache Kafka. It analyzes their architectural principles, message delivery and storage mechanisms, scalability features, fault tolerance, and performance metrics. The applicability of these tools under different workload types and architectural requirements is also investigated.*

Keywords: Message Brokers, RabbitMQ, Kafka, Distributed Systems, Messaging, Performance, Scalability

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