

Comparative Analysis of Monolithic vs. Distributed Architecture.

Amey Arun Padvekar, Vikaskumar Badriprasad Gupta

Students, Master of Computer Applications (MCA)

Late Bhausaheb Hiray S. S. Trust's Institute of Computer Application, Mumbai, India

Abstract: *This article compares Monolithic and Distributed structures, highlighting their strengths, weaknesses, and best uses. Monolithic architecture offers a simple, easy-to-develop, and efficient deployment solution for high-performance, low-complexity situations, but struggles with maintenance and scalability as applications grow. Distributed architecture, with its flexible, scalable, and fault-tolerant microservices and service-oriented designs, is ideal for large, complex systems, allowing for independent development, deployment, and scaling of services. However, it brings challenges in service orchestration, data consistency, and network latency. According to an analysis of case studies and performance metrics, the research suggests that monolithic architectures work well for small to medium-sized programs with limited scalability requirements, while distributed architectures are better suited for large, dynamic environments with a strong emphasis on fault tolerance and scalability.*

Keywords: Monolithic Architecture, Distributed Architecture, Microservices, Scalability, Fault Tolerance, Performance, System Complexity, Software Development, Deployment, Maintainability