

A Practical Evaluation of Deployment Strategies for Services Running in the Cloud

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Rapid production rollout of new features, vulnerability patches, and critical bug fixes is essential to maintaining a market advantage in today's competitive landscape. However, this need for speed introduces increased risks, as demonstrated by the 2025 Google Cloud incident, where a software deployment containing an undetected bug resulted in cascading service disruptions in major platforms, including Cloudflare, OpenAI, and Microsoft 365, requiring over seven hours for complete system recovery. Given the possible consequences, it becomes mandatory for organisations to select the most appropriate deployment strategy when rolling out new software code changes. This paper provides a comprehensive review of deployment strategies in modern development lifecycles, analysing both the advantages and limitations of each deployment strategy, as well as its practical considerations, such as complexity and cost. Additionally, we propose a framework for evaluating and comparing different approaches to deploying to production. Examining each approach alongside requirements specific to the service itself, such as urgency and risk tolerance, application complexity, and team expertise, organisations can select the most suitable deployment strategy for their use case.

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