

Dedicated to

“All my well wishers who prayed for my success”

Abstract

Cloud computing is representing the converging evolution of application models and computing infrastructure in many ways for consuming and building scalable distributed solutions. With the passage of time as techniques of building cloud applications have developed, so too have their infrastructure on which these applications run. Due to this synergistic evolution infrastructure can be maintained and provisioned independently of hosted applications. Design patterns in Cloud computing provide the way to document the methods and techniques used while providing services and designing the applications that provide these services. It provides basic level of solutions that help service providers to integrate different patterns to compose value added services of various granularity. In this way solution providers can focus on their business functionality taking advantage from this supporting infrastructure of patterns. In our work we presented a detailed work on cloud computing design patterns. In the 1st part of the thesis a detailed study is conducted on most commonly used design patterns in cloud computing and these patterns are listed. We classified these patterns on the granularity level on which they exist, we took the most problematic areas while building solutions for cloud hosted environments and identify that which design pattern is used to solve which problem or exist on which layer of the identified problem. Further, taking a little step towards the standardization of cloud design patterns we mapped the patterns on NIST and IBM architectures. In second part of our work we proposed some new patterns, and repeat the same process of classification on proposed patterns. we described context and problems in which these patterns can be used and to prove their effectiveness we mapped these patterns on NIST and IBM's reference architecture and give visualizations of layers on which these patterns can be mapped.

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