Abstract

Large mission critical real-time legacy OLTP systems supporting the service sectors like banking, telecom, and financial services are monolithic in nature and thereby not flexible to enable business transformation which is the need of the hour due to emerging dynamic changes to business ecosystem. Broadly speaking, these large mission critical applications can be classified into three stages of activities: pre-processing, core business processing and post processing activities. This paper focuses on making the Business processing activities tier lean and efficient. By leveraging recent advances in technologies, a methodology is described by which the OLTP applications can be successfully transformed into agile systems. The methodology enables a view of the Business Tier in five dimensions. The first dimension is identifying the business’s core critical path and how to make it lean. The second dimension is how to enhance concurrency of the activities in the critical path. The third dimension is to improve the parallelism in execution of concurrency. The fourth is to separate I/O operations off the critical path. The fifth being how to minimize contentions for shared resources to ensure higher efficiencies. The paper also presents, the results of the experiments carried out by applying the above recommendation and the performance improvements to
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decide the optimal setup for an environment for given workload. Addressing the five
dimensions of Business Tier, this paper demonstrates the transformation that can be achieved
which will enable the business to be agile and respond to market ecosystem demands in a very
efficient and effective manner.

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Index Terms

Computer Science
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**Keywords**
layering; concurrency; parallelism; OLTP; CPU affinity; speedup; lean critical path; Architecture; Performance gain;