Software as a Service: Do It Yourself or Use the Cloud

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Abstract: In the Software as a Service (SaaS) model, a service provider owns and operates an application that is accessed by many businesses over the Internet. A key benefit of this model is that, by careful engineering, it is possible to leverage economy of scale to reduce total cost of ownership relative to on-premises solutions. This tutorial will describe basic architectures and best practices for implementing enterprise SaaS applications. It will cover both first generation systems, which are based on conventional databases and middleware, as well as second generation systems, which are based on emerging cloud computing platforms. The discussion will include the following topics.

- The Business of SaaS. The tutorial will include a summary of the kinds of SaaS applications that are available today, their relative market shares, and the demographics of their customers. This information is crucial to the design of the SaaS application infrastructure because, by offering less functionality, it is generally easier to increase scalability and lower costs.

- Do It Yourself. The tutorial will outline best practices for implementing SaaS applications on conventional databases and middleware. The challenges of multi-tenancy, including managing resource contention and supporting tenant-level application extensions, will be discussed along with possible solutions. Several cases studies will be presented.

- Use the Cloud. The tutorial will describe emerging cloud computing platforms and the challenges in using them to implement enterprise applications. A primary issue in this regard is that these platforms generally provide little support for transactions and concurrency control. It seems clear that additional capabilities will have to be provided, but it is not clear how weak they can be.