Chapter 80
Deploying and Running Enterprise Grade Applications in a Federated Cloud

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ABSTRACT

The notion of cloud computing is a paradigm shift from local machines and networks to virtualization technologies with services as a technical and business concept. This shift introduces major challenges when using cloud for deploying and running enterprise applications in the current Enterprise ecosystems. For companies, picking and choosing the right cloud to meet requirements is hard, and no solution is likely to provide the end-to-end specific IT services delivery and an end-to-end IT solution. Conversely cloud federation assists in providing flexibility to the customer and enables them to lower their TCO by shifting from one cloud to another while mitigating risks associated with a single cloud approach. In order to create competitive differentiation, small businesses require multiple software systems to both meet minimal data management and creative expectations. At the other end of the enterprise ecosystem spectrum, large companies rely on thousands of services in order to meet the needs of everything from simple departmental database applications to core Enterprise Resource planning and Customer Relationship Management systems on which the enterprise itself is managed. As an optimal adoption decision cannot be established for all individual cases, the authors propose to analyze three different use cases for deployment of enterprise applications such as SAP, on the cloud in order to provide some valuable pointers to navigate the emerging cloud ecosystem: rapid provisioning, elasticity and live migration of enterprise applications.

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INTRODUCTION

Cloud computing is still in its early stages and constantly undergoing changes as new vendors, offers, services appear in the cloud market. This evolution of cloud computing model is driven by cloud providers bringing new services to the ecosystem or revamped and efficient exiting services primarily triggered by ever changing requirements by the consumers. However, as cloud computing is predominantly adopted by start-ups or SMEs so far and wide scale enterprise adoption of cloud computing model is still in its infancy. Enterprises are still carefully contemplating the various usage models where cloud computing can be employed to support their business operations. Often Enterprise Cloud Computing is understood as the outsourcing of business applications or data hosting to another organization's IT resources. While this is quite often the end result, it does not represent the overall objective and the complete set of possibilities for Enterprise Cloud Computing strategies.

Using cloud for deploying and running enterprise grade applications in the current Enterprise ecosystems faces major challenges. For example in order to create competitive differentiation, small businesses require multiple software systems to both meet minimal data management and creative expectations. At the other end of the scope scale, large enterprises rely on thousands of services in order to meet the needs of everything from simple departmental database applications to core Enterprise Resource planning (ERP) and Customer Relationship Management (CRM) systems on which the enterprise itself is managed. For companies, picking and choosing the right cloud to meet these needs it is hard, and no solution is likely to provide the end-to-end specific IT services deliver and end-to-end IT solution.

An optimal adoption decision cannot be established for all individual cases, as the types of resources (infrastructure, storage, software) obtained from a cloud depend on the size of the organization, understanding of IT impact on business, predictability of workloads, in optimal of existing IT landscape and available budget/ resources for testing and piloting.

In this chapter, we first propose to analyze three different use cases. Second, we present the architecture deployed for the analysis. Third, we present the experimental results and finally propose a pragmatic approach to cloud for companies and their enterprise application in light of this analysis.

BACKGROUND: LARGE ENTERPRISE BUSINESS USE CASES

The business application's use case is about legacy applications in the datacenter. Its focus is rapid provisioning, flexible and effective operations in the datacenter and reduced Total Cost of ownership (TCO). Along these lines, the optimization of utilization of available hardware resources using virtualization technology is a goal of large independent software vendors (ISV) as well as of their customers. In addition, the enhanced flexibility given by virtualization technology for provisioning and maintenance of enterprise software instances is effecting today's datacenter operations for large-scale enterprise IT landscapes as shown by Ellahi, et al. (2011). The trend towards operational flexibility via virtualization of legacy applications is gaining momentum by customers.

Use Case Scenarios

This set of use cases are about classical or "pre-cloud era" applications in the datacenter. They focus on improving the rapid provisioning, flexible and effective operations in the datacenter. As the result, they demonstrate how to streamline and automate the life cycle management within cloud environment while reducing application TCO. Along these lines, the optimization of utilization of