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Dynamic Cloud Collaboration Platform

A Market-Oriented Approach

 Springer

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Preface

The purpose of this book is to develop solutions to enable dynamic collaboration of multiple cloud service providers (CPs) to ensure quality of service (QoS)-constrained service delivery, by combating against resource over-provisioning, service level agreement (SLA) violation, and excessive operational cost for a cloud provider. Throughout the book, we introduce landmark achievements towards realizing this aim.

Present trends in cloud provider capabilities give rise to the interest in federating or collaborating clouds, thus allowing providers to revel on increased scale and reach more than that is achievable individually. Current research efforts in this context mainly focus on building supply chain collaboration (SCC) models in which CPs leverage cloud services from other CPs for seamless provisioning. Nevertheless, in the near future, we can expect that hundreds of CPs will compete to offer services and thousands of users also compete to receive the services to run their complex heterogeneous applications on cloud computing environment. In this open federation scenario, existing collaboration models (i.e., SCC) are not applicable. In fact, while clouds are typically heterogeneous and dynamic, the existing collaboration models are designed for static environments where a priori agreements among the parties are needed to establish the federation.

To move beyond these shortcomings, the book establishes the basis for developing advanced and efficient collaborative cloud service solutions that are scalable, of high performance, and cost effective. We term the technology for interconnection and inter-operation of CPs in open cloud federation as Dynamic Cloud Collaboration (DCC) in which various CPs (smaller, medium, and large) of complementary service requirements will collaborate dynamically to gain economies of scale and enlargements of their capabilities to meet QoS requirements of consumers. In this context, this book addresses four key issues—when to collaborate (triggering circumstances), whom to collaborate with (suitable partners), how to collaborate (architectural model), and how to demonstrate collaboration applicability (simulation study). It also provides candidate solutions to them, which are effective in real environments.

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