Cloud-Hosted Databases:
Technologies, Challenges and Opportunities

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Abstract

Cloud computing technology has revolutionized the way computational resources and services are commercialized and delivered to customers. Recently, the cloud has become an increasingly popular platform for hosting software applications in a variety of domains such as e-retail, finance, news and social networking. Thus, we are witnessing a proliferation in the number of applications with a tremendous increase in the scale of the data generated as well as being consumed by such applications. Cloud-hosted database systems powering these applications form a critical component in the software stack of these applications. The quest for conquering the challenges posed by hosting databases on cloud computing environments has led to a plethora of systems and approaches. In practice, there are three main technologies, which are commonly used for deploying the database tier of software applications in cloud platforms, namely, the services of NoSQL storage systems, Database-as-a-service (DaaS) platforms and virtualized database servers. This tutorial aims to discuss the basic characteristics and the recent advancements of each of these technologies, illustrate the strengths and weaknesses of each technology and presents some opportunities for future work which are required to tackle existing research challenges and bring forward the vision of deploying data-intensive applications on cloud platforms.

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