The need of a viable SLA management framework for forming a reliable relationship between the cloud provider and cloud consumer: A service provider perspective

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In today's competitive world, service providers need to be customer-focused and proactive in their marketing strategies to create consumer awareness of their services. Cloud computing provides an open and ubiquitous computing feature in which a large random number of consumers can interact with providers and request services. In such an environment, there is a need for intelligent and efficient methods that increase confidence in the successful achievement of business requirements. One such method is the service level agreement (SLA), which is comprised of service objectives, business terms, service relations, obligations and the possible action to be taken in the case of SLA violation. Most of the emphasis in the literature has until now, been on the formation of meaningful SLAs by service consumers, through which their requirements will be met. However, in an increasingly competitive market based on the cloud environment, service providers too need a framework that will form a viable SLA, predict possible SLA violations before they occur, and generate early warning alarms that flag a potential lack of resources. This is because when a provider and a consumer commit to an SLA, the service provider is bound to reserve the agreed amount of resources for the entire period of that agreement – whether the consumer uses them or not. It is therefore very important for cloud providers to accurately predict the likely resource usage for a particular consumer and to formulate an appropriate SLA before finalizing an agreement. This problem is more important for a small to medium cloud service provider which has limited resources that must be utilized in the best possible way to generate maximum revenue. A viable SLA in cloud computing is one that intelligently helps the service provider to determine the amount of resources to offer to a requesting consumer, and there are number of studies on SLA management in the literature. From a thorough analysis, we observe that the lack of a viable SLA management framework renders a service provider unable to make wise decisions in forming an SLA, which could lead to service violations and violation penalties. To fill this gap, the optimized personalized viable SLA (OPV-SLA) framework which assists a service provider to form a viable SLA and start managing SLA violation before an SLA is formed and executed.

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