Robust reputation based trust management framework for federated-cloud environments

ABSTRACT

Recently, cloud computing is emerging drastically due to its ability to provide computing and other services to customers seamlessly. However, in heterogeneous environment, when there are various consumers and multiple service providers interacting and sharing resources, concern on security issues is crucial. Hence, the trust elements can be a motivating factor that can help to materialize the consumers on demand resource request transparently. It is worth to note that establishing trust is not an easy task especially when the attackers manipulate reputation feedback that is supposed to be trustworthy. Thus, the feedback mechanism based on the trust level needs to be further studied to increase reliability of trust management, particularly when involves with a largescale environment where strangers are competing with each other in offering services that are said to meet their quality of service and high reliable. In this study, we argue that the final trust can be manipulated by intruders using reputation feedback mechanism with untrustworthy value that inherited to the final trust value that can be wrongly interpreted by the consumers. To overcome this scenario, we suggest the rate of change to be used together with final trust value as it makes the trust value more robust where the intruder's fake reputation feedback can be neglected. We prove this assumption using descriptive statistic where the standard deviation of proposed approach is low. As a result, the rate of change is significant in determining the trustworthy of the cloud service providers (CSP).