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A Collaborative Analysis Method of User Abnormal Behavior Based on Reputation Voting in Cloud environment

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Abstract

It is the foundation of accessing and controlling cloud environment to establish the mutual trust relationship between users and clouds. How to identify the credible degree of the user identity and its behaviors have become the core problems. Combining with the abnormal recognition and misuse recognition, this paper proposes a collaborative analysis method of user abnormal behavior based on reputation voting. Firstly, the under-sampling and pruning technique are used to construct training samples to avoid high overhead for identifying all data, meanwhile it has solved the problem of unbalanced data learning. Moreover, reputation computing model combining with semi-supervised learning constructs ensemble classifier, and 2-level Chord is used to store reputation to realize its bidirectional query. On this basis, the base classifier is used to vote user behaviors by reputation in order to improve the speed of identifying abnormal behavior. The experimental results show that the scheme could improve the detection speed and clustering accuracy obviously in big data of the mobile user environment, and it has better effect for larger dataset with unbalanced rate especially.

Keywords: Mobile cloud services, under-sampling, reputation voting, Bidirectional-Chord ring, abnormal synergism

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