World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:11, No:03, 2017

Intrusion Detection in Cloud Computing Using Machine Learning

Authors : Faiza Babur Khan, Sohail Asghar

Abstract : With an emergence of distributed environment, cloud computing is proving to be the most stimulating computing paradigm shift in computer technology, resulting in spectacular expansion in IT industry. Many companies have augmented their technical infrastructure by adopting cloud resource sharing architecture. Cloud computing has opened doors to unlimited opportunities from application to platform availability, expandable storage and provision of computing environment. However, from a security viewpoint, an added risk level is introduced from clouds, weakening the protection mechanisms, and hardening the availability of privacy, data security and on demand service. Issues of trust, confidentiality, and integrity are elevated due to multitenant resource sharing architecture of cloud. Trust or reliability of cloud refers to its capability of providing the needed services precisely and unfailingly. Confidentiality is the ability of the architecture to ensure authorization of the relevant party to access its private data. It also guarantees integrity to protect the data from being fabricated by an unauthorized user. So in order to assure provision of secured cloud, a roadmap or model is obligatory to analyze a security problem, design mitigation strategies, and evaluate solutions. The aim of the paper is twofold; first to enlighten the factors which make cloud security critical along with alleviation strategies and secondly to propose an intrusion detection model that identifies the attackers in a preventive way using machine learning Random Forest classifier with an accuracy of 99.8%. This model uses less number of features. A comparison with other classifiers is also presented.

Keywords : cloud security, threats, machine learning, random forest, classification
Conference Title : ICCCSS 2017 : International Conference on Cloud Computing and Services Science
Conference Location : Prague, Czechia
Conference Dates : March 23-24, 2017

Open Science Index, Computer and Systems Engineering Vol:11, No:03, 2017 publications.waset.org/abstracts/68047.pdf