World Academy of Science, Engineering and Technology
International Journal of Electronics and Communication Engineering
Vol:12, No:09, 2018

Applicability of Fuzzy Logic for Intrusion Detection in Mobile Adhoc Networks

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Abstract : Mobile Adhoc Networks (MANETs) are gaining popularity due to their potential of providing low-cost mobile connectivity solutions to real-world communication problems. Integrating Intrusion Detection Systems (IDS) in MANETs is a tedious task by reason of its distinctive features such as dynamic topology, de-centralized authority and highly controlled/limited resource environment. IDS primarily use automated soft-computing techniques to monitor the inflow/outflow of traffic packets in a given network to detect intrusion. Use of machine learning techniques in IDS enables system to make decisions on intrusion while continuous keep learning about their dynamic environment. An appropriate IDS model is essential to be selected to expedite this application challenges. Thus, this paper focused on fuzzy-logic based machine learning IDS technique for MANETs and presented their applicability for achieving effectiveness in identifying the intrusions. Further, the selection of appropriate protocol attributes and fuzzy rules generation plays significant role for accuracy of the fuzzy-logic based IDS, have been discussed. This paper also presents the critical attributes of MANET's routing protocol and its applicability in fuzzy logic based IDS.

Keywords : AODV, mobile adhoc networks, intrusion detection, anomaly detection, fuzzy logic, fuzzy membership function, fuzzy inference system
Conference Title : ICWCSN 2018 : International Conference on Wireless Communication and Sensor Networks
Conference Location : Singapore, Singapore
Conference Dates : September 10-11, 2018

Open Science Index, Electronics and Communication Engineering Vol:12, No:09, 2018 publications.waset.org/abstracts/94205/pdf