Detecting resource consumption attack over MANET using an artificial immune algorithm.

ABSTRACT

The Human Immune System (HIS) is considered as a bank of models, functions, and concepts from where Artificial Immune algorithms are inspired. These algorithms are used to secure both host-based and network-based systems. However, it is not only important to utilize the HIS in producing AIS-based algorithms as much as it is important to introduce an algorithm with high performance. Therefore, creating a balance between utilizing HIS on one side and introducing the required AIS-based intrusion detection algorithm on the other side is a crucial issue which would be valuable to investigate. Securing the mobile ad hoc network (MANET) which is a collection of mobile, decentralized, and self organized nodes is another problem, which adds more challenges to the research. This is because MANET properties make it harder to be secured than the other types of static networks. We claim that AISs' properties such as being self-healing, self-defensive and self-organizing can meet the challenges of securing the MANET environment. This paper's objective is to utilize the biological model used in the dendritic cell algorithm (DCA) to introduce a Dendritic Cell Inspired Intrusion Detection Algorithm (DCIIDA). DCIIDA is introduced to detect the Resource Consumption Attack (RCA) over MANET. Furthermore, this study proposes a DCIIDA architecture which should be applied by each node in MANET.