

Defending against wireless network intrusion

The security mechanisms for various wired networks are more or less well-defined. Especially when intrusion detection and prevention techniques are considered, wired networks appear to be in a much better status than their wireless counterparts. Indeed, security concerns are, still, a significant impediment to widespread adoption of wireless network technologies. Because of the use of wireless communications technology, structure of the wireless networks, limited resources available on wireless devices, and open nature of wireless communications, employing an effective and efficient intrusion detection and prevention system for detecting and thwarting malicious attacks against wireless communication still remains a great challenge to researchers. On the other side, recent increase in the interest in anywhere, anytime, anybody's network with the aid of wireless self-organizing networks has made the demand of effective intrusion detection and prevention techniques even more critical. We consider four types of wireless networks under wireless self-organizing networks (SON) category: Mobile Ad Hoc Network (MANET), Wireless Sensor Network (WSN), Wireless Mesh Network (WMN), and Vehicular Ad Hoc Network (VANET). The status quo of these networks lacks standardized mechanisms for intrusion detection and prevention. In particular for WSN, with limited resources of the involved tiny sensor nodes, employing such defensive and/or preventive mechanisms is, indeed, a tough challenge. If the system is distributed, the nodes may not be able to run the system; if centralized and controlled by the base station, the system may not serve the actual purpose of intrusion handling within the actual deployed network. In this special issue, our objective was to put together the latest advancements in these related areas and to get the thoughts of the researchers, practitioners, and users of these technologies.

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