

STARS: A Statistical Traffic Pattern Discovery System for MANETs

Abstract:

Many anonymity enhancing techniques have been proposed based on packet encryption to protect the communication anonymity of mobile ad hoc networks (MANETs). However, in this paper, we show that MANETs are still vulnerable under passive statistical traffic analysis attacks. To demonstrate how to discover the communication patterns without decrypting the captured packets, we present a novel statistical traffic pattern discovery system (STARS). STARS works passively to perform traffic analysis based on statistical characteristics of captured raw traffic. STARS is capable of discovering the sources, the destinations, and the end-to-end communication relations. Empirical studies demonstrate that STARS achieves good accuracy in disclosing the hidden traffic patterns.