Abstract

This paper presents a comprehensive review of performance-security trade-off based on RANETs. It is suggested that stochastic Petri nets (SPNs) are the best choice to investigate performance-security trade-off in RANETs. In the context of RANETs, a mathematical model that is based on SPNs is analysed to investigate performance-security trade-off. Security is assessed in terms of mean time to security failure (MTTSF) and performance is assessed in terms of service response time (R). The main objective is to find optimal settings that includes the best intrusion detection interval and best batch rekey interval under which mean time to security failure is maximized while satisfying performance requirement in terms of system response time.

References

- Bianchi, G., "Performance Analysis of the IEEE 802.11 Distributed Coordination..."
Investigation of Performance-Security Tradeoff in Robotic Mobile Wireless Ad hoc Networks (RANETs) using Stochastic Petri Nets

- Jeffrey W. Herrmann Edward Lin, Petri Nets: Tutorial and Applications, CIM Lab, Institute for Systems Research, University of Maryland, College Park, Maryland INSTITUTE FOR SYSTEMS RESEARCH. A National Science Foundation Engineering Research Center, supported by NSF, the University of Maryland, Harvard University, and Industry. The 32th Annual Symposium of the Washington Operations Research -Management Science Council, Washington, D. C.

Index Terms

Computer Science Mobile Networks

Keywords

Mobile ad hoc networks (MANETs) robotic mobile wireless ad hoc networks (RANETs) queueing network models (QNMs)

Petri nets

Stochastic Petri nets (SPN)

intrusion detection system (IDS)

rekeying