

1154-VF-2060

**Nawa Raj Pokhrel\***, 1 Drexel Dr., New Orleans, LA 70125, and **Chris P. Tsokos** and **Keshav Pokhrel**. *A Stochastic Predictive Model to Determine the Network Vulnerability Risk.*

Precise quantification of vulnerability and level of security for the computer network is the challenging issue from the long time. Security experts and administrators in the subject area used to act based on common security metrics, their proficiencies and experiences lacking formal statistical model. This paper propose a stochastic model to quantify the risk associated with the computer network in conjunction with the Common Vulnerability Scoring System (CVSS) framework. The model we developed uses the attack graph to represent the network environment where network probability risk is calculated based on the attack path. The cumulative probability of the given attack path helps the system administrator to implement the appropriate security measure to protect the network and adopt proactive security measures against potential attacks. Gaining in depth understanding of risk associated with the computer network helps individual to implement decisions like deployment of security products and even design of network topologies. (Received September 17, 2019)