

A Framework for Security Risk Level Measures Using CVSS for Vulnerability Categories

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Abstract : With increasing dependency on IT infrastructure, the main objective of a system administrator is to maintain a stable and secure network, with ensuring that the network is robust enough against malicious network users like attackers and intruders. Security risk management provides a way to manage the growing threats to infrastructures or system. This paper proposes a framework for risk level estimation which uses vulnerability database National Institute of Standards and Technology (NIST) National Vulnerability Database (NVD) and the Common Vulnerability Scoring System (CVSS). The proposed framework measures the frequency of vulnerability exploitation; converges this measured frequency with standard CVSS score and estimates the security risk level which helps in automated and reasonable security management. In this paper equation for the Temporal score calculation with respect to availability of remediation plan is derived and further, frequency of exploitation is calculated with determined temporal score. The frequency of exploitation along with CVSS score is used to calculate the security risk level of the system. The proposed framework uses the CVSS vectors for risk level estimation and measures the security level of specific network environment, which assists system administrator for assessment of security risks and making decision related to mitigation of security risks.

Keywords : CVSS score, risk level, security measurement, vulnerability category

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