

Assessing the Efficacy of Network Mapping, Vulnerability Scanning, and Penetration Testing in Enhancing Security for Academic Networks

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Abstract : In an era where academic institutions increasingly rely on information technology, the security of academic networks has emerged as a paramount concern. This comprehensive study delves into the effectiveness of security practices, including network mapping, vulnerability scanning, and penetration testing, within academic networks. Leveraging data from surveys administered to faculty, staff, IT professionals and IT students in the university, the study assesses their familiarity with these practices, perceived effectiveness, and frequency of implementation. The findings reveal that a significant portion of respondents exhibit a strong understanding of network mapping, vulnerability scanning, and penetration testing, highlighting the presence of knowledgeable professionals within academic institutions. Additionally, active scanning using network scanning tools and automated vulnerability scanning tools emerge as highly effective methods. However, concerns arise as the respondents show that the academic institutions conduct these practices rarely or never. Notably, many respondents have reported significant vulnerabilities or security incidents through these security measures within their institution. This study concludes with recommendations to enhance network security awareness and practices among faculty, staff, IT personnel, and students, ultimately fortifying the security posture of academic networks in the digital age.

Keywords : network security, academic networks, vulnerability scanning, penetration testing, information security

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