

Managing Networks and Systems in the Modern Security Landscape: An Integrated Approach to Infrastructure Resilience

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Abstract : The rapid evolution of today's technology ecosystem, marked by the fusion of cloud computing, IoT, and distributed systems, has introduced complex security challenges in network and systems administration. Our research develops a framework that seamlessly merges contemporary systems administration with advanced security engineering methodologies, particularly focusing on DevSecOps implementation and zero-trust architectural principles. Comprehensive testing and analysis across diverse organizational environments reveal that this unified approach achieves remarkable results: a 47% decrease in security-related incidents while consistently maintaining 99.9% system uptime. The framework delivers actionable guidelines for deploying secure infrastructure architectures, automating compliance oversight, and implementing dynamic security protocols. This integration effectively eliminates the historical divide between systems administration and security engineering, fostering an environment where operational efficiency and security resilience coexist harmoniously.

Keywords : network security, systems administration, security engineering, infrastructure resilience

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