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СЕКЦІЯ № 1 «КОМП'ЮТЕРНІ НАУКИ ТА КІБЕРБЕЗПЕКА»

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СЕКЦІЯ 1

**«Комп'ютерні науки та
кібербезпека»**

Network Reliability Engineering for SDN

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Network reliability engineering (NRE) represents a methodology to quantify and automate network reliability. Diverging from conventional methodologies, NRE endeavors to tackle intricate reliability challenges while integrating the principles and practices of NetDevOps. NRE methodologies comprehensively examine network degradation and failure mechanisms under stress conditions, facilitating opportunities for automation and documentation of incident responses. This proactive stance toward preempting production outages underscores NRE's overarching goal. NRE addresses the complexity of network operations by establishing meticulous codification and automated responses, thereby steering networks toward a self-regulating model.

When applied to software-defined networking (SDN), NRE implementation becomes more straightforward and provides enhanced testing capabilities. SDN's centralized control over hardware facilitates NRE activities by automating and abstracting the control and configuration processes across entire network architectures within its domain. Upon deploying network software and hardware systems, an NRE undertakes the task of coding network software information and configurations into source code repositories. The NRE allows enhancements in reliability, scalability, and efficiency, as well as the provision of networking resources for end users and dynamic systems integration.

Moreover, an NRE monitors service-level indicators, employing analytics to initiate automatic responses and notifications, which is critical for network management. Additionally, reliability indicators are utilized by the NRE to assess the effectiveness of their strategies in achieving predefined targets. Consequently, the role of an NRE is pivotal in safeguarding the reliability and stability of softwarized networks.