

Building a network monitoring system for the University of Economics - Technical Industry

To Thanh Cong

Abstract: This thesis presents the design and implementation of a comprehensive network monitoring system tailored for the University of Economics – Technology for Industries (UNETI). The primary objective is to address the challenges of maintaining network stability, security, and performance within a dynamic educational environment. The proposed system leverages open-source tools, including Zabbix for centralized data collection and alerting, integrated with MRTG for traffic graphing and Syslog for log analysis. The architecture covers critical network devices, server infrastructure, and bandwidth utilization across the campus. Key performance indicators such as latency, packet loss, and device uptime are continuously tracked. The system provides real-time dashboards, automated alerting mechanisms, and historical reporting to facilitate proactive network management. Implementation results demonstrate significant improvements in fault detection time and resource allocation efficiency. This solution offers a scalable, cost-effective framework suitable for similar mid-sized academic institutions, enhancing overall network reliability and supporting the university's digital transformation goals.

Keywords: network monitoring system, university network, industrial economics, technical university