

PENGEMBANGAN SISTEM MONITORING GANGGUAN JARINGAN INTERNET KAMPUS DENGAN MEKANISME NOTIFIKASI *REAL-TIME* MELALUI *TELEGRAM BOT*

(Studi Kasus : Laboratorium)

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ABSTRAK

Jaringan internet merupakan komponen penting dalam mendukung kegiatan praktikum di laboratorium kampus, namun pada Laboratorium Gedung Teknik Informatika Politeknik Negeri Bengkalis masih sering terjadi gangguan jaringan yang pendeteksiannya dilakukan secara manual sehingga menyebabkan keterlambatan penanganan dan mengganggu proses pembelajaran. Penelitian ini bertujuan mengembangkan sistem monitoring gangguan jaringan internet kampus dengan mekanisme notifikasi *real-time* melalui *Telegram Bot* menggunakan *Zabbix* dan protokol SNMP untuk memantau ICMP ping, latency, *Packet Loss*, trafik jaringan, dan status konektivitas perangkat. Skenario pengujian dilakukan dengan mensimulasikan lima jenis gangguan: *Router Down* (mencabut kabel power *MikroTik*), *Link Down* (mencabut kabel LAN), *Packet Loss* (simulasi loss 10% dengan tc netem), *Latency* (simulasi delay 150ms dengan tc netem), dan Trafik Tinggi (speedtest dan *Download*). Hasil pengujian menunjukkan sistem berhasil mendeteksi kelima gangguan dengan waktu deteksi rata-rata 15 detik dan mengirimkan notifikasi secara *real-time* melalui *Telegram Bot*. Sistem ini diharapkan dapat mempercepat deteksi dan penanganan gangguan, mengurangi *Downtime*, serta meningkatkan efektivitas kegiatan praktikum di laboratorium.

Kata kunci: Monitoring Jaringan, *Zabbix*, *Telegram Bot*, Notifikasi *Real-time*.

DEVELOPMENT OF A CAMPUS INTERNET NETWORK DISRUPTION MONITORING SYSTEM WITH A REAL-TIME NOTIFICATION MECHANISM VIA TELEGRAM BOT

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ABSTRACT

The internet network is essential for supporting practicum activities in campus laboratories, but the laboratory at the Informatics Engineering Building of Politeknik Negeri Bengkalis frequently experiences network disruptions that are still detected manually, causing delays in handling and disrupting the learning process. This study aims to develop a campus internet network disruption monitoring system with real-time notifications via Telegram Bot using Zabbix and SNMP protocol to monitor ICMP ping, latency, Packet Loss, network traffic, and device connectivity status. Testing scenarios were conducted by simulating five types of disruptions: Router Down (unplugging MikroTik power cable), Link Down (unplugging LAN cable), Packet Loss (10% loss simulation using tc netem), Latency (150ms delay simulation using tc netem), and High Traffic (speedtest and Downloading). The test results show that the system successfully detects all five disruptions with an average detection time of 15 seconds and sends real-time notifications via Telegram Bot. This system is expected to accelerate detection and handling of disruptions, reduce Downtime, and improve the effectiveness of practicum activities in the laboratory.

Keywords: Network Monitoring, Zabbix , Telegram Bot, Real-time Notification.