Nama : **Ari Firmansyah**
NIM : **2022231120**
Judul : **Analisis Infrastruktur dan Keamanan Jaringan *Wireless Local Area Network* (WLAN) di PT. SINGA LAUTAN INDONESIA**

ABSTRAK

Jaringan *Wireless Local Area Network* (WLAN) merupakan infrastruktur penting dalam mendukung operasional PT. SINGA LAUTAN INDONESIA. Evaluasi menyeluruh terhadap infrastruktur dan keamanan jaringan diperlukan untuk mengidentifikasi kelemahan teknis, keterbatasan kapasitas, serta potensi risiko keamanan yang dapat memengaruhi kinerja perusahaan. Penelitian ini bertujuan untuk menganalisis infrastruktur jaringan WLAN di PT. SINGA LAUTAN INDONESIA, mengevaluasi keamanannya, serta merumuskan rekomendasi teknis dan praktis untuk pengembangan jaringan yang lebih andal dan aman.

Metode penelitian meliputi observasi langsung terhadap topologi, penempatan, dan kondisi perangkat jaringan, pengukuran kualitas sinyal menggunakan aplikasi *survey Wi-Fi* dan *Speedtest by Ookla*, serta wawancara dengan tim IT dan pengguna untuk menggali pengalaman dan kebutuhan jaringan. Pengujian performa jaringan dilakukan dengan mengukur kecepatan unduh, unggah, *latency*, *jitter*, dan *packet loss* di beberapa titik strategis. Analisis trafik menggunakan *NetFlow* dan *Wireshark* dilakukan untuk memantau distribusi trafik dan mengidentifikasi potensi *bottleneck*. Evaluasi keamanan dilakukan melalui telaah kebijakan, pengelolaan akses, serta monitoring *log* jaringan menggunakan *Unifi Controller*.

Hasil penelitian menunjukkan bahwa infrastruktur jaringan WLAN PT. SINGA LAUTAN INDONESIA telah dirancang dengan topologi *hybrid* yang fleksibel dan andal, didukung penempatan *Access Point* yang strategis serta perangkat keras dan lunak yang sesuai standar. Kualitas sinyal dan performa jaringan dinilai sangat baik, tanpa ditemukan *blind spot*. Dari sisi keamanan, PT. SINGA LAUTAN INDONESIA telah menerapkan kebijakan dasar, namun monitoring dan deteksi ancaman masih perlu ditingkatkan. Rekomendasi meliputi optimalisasi segmentasi VLAN, *upgrade* perangkat, penguatan kebijakan keamanan, serta pengembangan sistem monitoring *real-time*.

Kata Kunci: Infrastruktur Jaringan, Keamanan Jaringan, Pengujian Jaringan, WLAN.

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Name	:	**Ari Firmansyah**
NIM	:	**2022231120**
Title	:	***Analysis of Infrastructure and Security of the Wireless Local Area Network (WLAN) at PT. SINGA LAUTAN INDONESIA***

ABSTRACT

The Wireless Local Area Network (WLAN) is a vital infrastructure supporting operations and productivity at PT. SINGA LAUTAN INDONESIA. A comprehensive evaluation of the WLAN's infrastructure and security is essential to identify technical weaknesses, capacity limitations, and potential security risks that may impact company performance. This study aims to analyze the WLAN infrastructure at PT. SINGA LAUTAN INDONESIA, assess its security aspects, and formulate technical and practical recommendations for developing a more reliable and secure network.

The research methods include direct observation of network topology, device placement, and network hardware conditions; signal quality measurements in various work areas using Wi-Fi survey applications and Speedtest by Ookla; and interviews with IT staff and users to gather information about network usage experiences and technical issues. Network performance testing was conducted by measuring download and upload speeds, latency, jitter, and packet loss at several strategic points. Traffic and capacity analysis utilized NetFlow and Wireshark to monitor traffic distribution and identify potential bottlenecks. Security evaluation was performed through policy review, access management analysis, and log monitoring using the Unifi Controller.

The results show that the WLAN infrastructure at PT. SINGA LAUTAN INDONESIA is designed with a flexible and reliable hybrid topology, supported by strategic placement of Access Points and standard-compliant hardware and software. Signal quality and network performance are excellent, with no blind spots detected. In terms of security, PT. SINGA LAUTAN INDONESIA has implemented basic policies such as strong passwords and access restrictions, but monitoring and threat detection still need improvement. Recommendations include optimizing VLAN segmentation, upgrading devices, strengthening security policies, and developing real-time monitoring systems.

Keyword: *Network Infrastructure, Network Security, Network Testing, WLAN.*

References: 48 sources (2021 – 2025)