

DAFTAR PUSTAKA

- [1] C. M. Annur, "Individu Pengguna Internet Global Tembus 5,35 Miliar pada Januari 2024," Katadata. 8 Februari 2024 Available: Katadata, <https://databoks.katadata.co.id/datapublish/2024/02/08/individu-pengguna-internet-global-tembus-535-miliar-pada-januari-2024>. [Diakses 15 April 2024, 13:07:24 WIB].
- [2] "APJII Jumlah Pengguna Internet Indonesia Tembus 221 Juta Orang," APJII, 2024. Available: APJII, <https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang>. [Diakses 15 Juni 2024, 02:25:48 WIB].
- [3] D. S. Saputri, "Indonesia Peringkat ke-2 Dunia Kasus Kejahatan Siber," News Republica, 21 Juli 2025. Available: Republika, <https://news.republika.co.id/berita/nmjajy/indonesia-peringkat-ke2-dunia-kasus-kejahatan-siber>. [Diakses 23 Juli 2025, 23:40:23 WIB].
- [4] Badan Penelitian dan Pengembangan SDM Kominfo, "Jenis-Jenis Serangan Siber di Era Digital," Kominfo, 15 Juni 2024. Available: Kominfo, <https://bpptik.kominfo.go.id/Publikasi/detail/jenis-jenis-serangan-siber-di-era-digital>. [Diakses 15 Juni 2025, 02:53:49 WIB].
- [5] Admin CSIRT Banten, "RI Dihantam 700 Juta Serangan Siber di 2022, Modus Pemerasan Dominan," CISRT Provinsi Banten. Available: CISRT Banten, <https://csirt.bantenprov.go.id/portal/articles/read/ri-dihantam-700-juta-serangan-siber-di-2022-modus-pemerasan-dominan>. [Diakses 15 Juni 2024 09:02:46 WIB]
- [6] "3 Juta Serangan Siber Ancam Pengguna Internet di RI Sepanjang Q1 2025," CNN Indonesia, 2025. Available: CNN Indonesia, <https://www.cnnindonesia.com/teknologi/20250502154407-192-1225071/3-juta-serangan-siber-ancam-pengguna-internet-di-ri-sepanjang-q1-2025>. [Diakses 25 Juli 2025 09:15:30 WIB]
- [7] T. Vimy *et al.*, "Ancaman Serangan Siber Pada Keamanan Nasional Indonesia," *Jurnal Kewarganegaraan*, vol. 6, no. 1, pp. 2319–2327, 2022.
- [8] O. Yoachimik and J. Pacheco, "Targeted By 20.5 Million DDOS Attacks, Up 358% Year-over-year: Cloudflare's 2025 Q1 Ddos Threat Report," Cloudflare Blog, 2025. Available: <https://blog.cloudflare.com/ddos-threat-report-for-2025-q1/>. [Diakses 26 Juli 2025 20:07:28 WIB]
- [9] S. Prathibha *et al.*, "Detection Methods for Software Defined Networking Intrusions (SDN)," in *Proceedings - IEEE International Conference on Advances in Computing, Communication and Applied Informatics, ACCAI 2022*, Institute of Electrical and Electronics Engineers Inc., 2022.

- [10] A. Bhardwaj, R. Tyagi, N. Sharma, A. Khare, M. S. Punia, and V. K. Garg, "Network Intrusion Detection In Software Defined Networking With Self-Organized Constraint-Based Intelligent Learning Framework," *Measurement: Sensors*, vol. 24, Dec. 2022.
- [11] I. M. Huda and I. M. Suartana, "Implementasi Intrusion Prevention System Untuk Mencegah Serangan DDOS pada Software Defined Network," *Journal of Informatics and Computer Science*, vol. 03, pp. 180–185, 2021.
- [12] S. G. Zwane, "An Intrusion Detection System For Sdn-Based Tactical Networks: A Machine Learning Approach," M.S. Thesis, University of Zululand, Shouth Africa, 2020.
- [13] C. Birkinshaw, E. Rouka, and V. G. Vassilakis, "Implementing An Intrusion Detection And Prevention System Using Software-Defined Networking: Defending Against Port-Scanning And Denial-Of-Service Attacks," *Journal of Network and Computer Applications*, vol. 136, pp. 71–85, Jun. 2019.
- [14] S. Zwane, P. Tarwireyi, and M. Adigun, "A Flow-based IDS for SDN-enabled Tactical Networks," in *Proceedings - 2019 International Multidisciplinary Information Technology and Engineering Conference, IMITEC 2019*, Institute of Electrical and Electronics Engineers Inc., Nov. 2019.
- [15] H. Wang, Y. Chen, J. Xie, and C. Liu, "Research on digital empowerment, innovation vitality and manufacturing supply chain resilience mechanism," *PLoS One*, vol. 20, no. 2 February, pp. 1–28, 2025.
- [16] J. Wei, X. Zhang, and T. Tamamine, "Digital Transformation In Supply Chains: Assessing The Spillover Effects On Midstream Firm Innovation," *Journal of Innovation and Knowledge*, vol. 9, no. 2, p. 100483, 2024.
- [17] Akoh Atadoga, Femi Osasona, Olukunle Oladipupo Amoo, Oluwatoyin Ajoke Farayola, Benjamin Samson Ayinla, and Temitayo Oluwaseun Abrahams, "The Role of It in Enhancing Supply Chain Resilience: A Global Review," *International Journal of Management & Entrepreneurship Research*, vol. 6, no. 2, pp. 336–351, 2024.
- [18] S. Hanadwiputra, Subadri, and D. Prawinarko, "Implementasi Konsep Software Defined Networking (Sdn) Wide Area Network (Wan) Pada Mikrotik Dengan Python 3," *JUPITER Jurnal Teknologi Informatika & Komputer*, vol. 4, no. 2, 2023.
- [19] R. Amalia, T. Umi Kalsum, and Riska, "Analisis dan Implementasi Software Defined Networking (SDN) untuk Automasi Perangkat Jaringan," *Infotek : Jurnal Informatika dan Teknologi*, vol. 4, no. 2, p. 312, 2021.

- [20] H. Alamsyah, Riska, and A. Al Akbar, "Analisa Keamanan Jaringan Menggunakan Network Intrusion Detection and Prevention System," *JOINTECS (Journal of Information Technology and Computer Science)*, vol. 5, no. 1, p. 17, 2020.
- [21] A. Montazerolghaem and S. Imanpour, "Evaluation and Performance Analysis of the Ryu Controller in Various Network Scenarios," *SSRN Electronic Journal*, vol. 2, no. 3, 2025.
- [22] A. T. Albu-Salih, "Performance Evaluation of Ryu Controller in Software Defined Networks," *Journal of Al-Qadisiyah for Computer Science and Mathematics*, vol. 14, no. 1, 2022.
- [23] C. Jayawardena, J. Chen, A. Bhalla, and L. Bui, "Comparative Analysis of Pox and Ryu Sdn Controllers in Scalable Networks," *International Journal of Computer Networks and Communications*, vol. 17, no. 2, pp. 35–51, 2025.
- [24] M. S. Ataa, "Ryu-IDS : Intrusion Detection System for Modern Networks Title page Affiliation : Faculty of Computers and Artificial Intelligence (FCAI), Authors :," *Res Sq*, no. D1, 2025.
- [25] J. K. Barends, F. Dewanta, N. Bogi, and A. Karna, "Perancangan dan Analisis Intrusion Prevention Sistem Berbasis SNORT dan IPTABLES dengan Integrasi Honeypot pada Arsitektur Software Defined Network," 2021.
- [26] M. S. Hawari and I. F. Kurniawan, "Penerapan Iptables Firewall Pada Linux Dengan Menggunakan Fedora," *Jurnal Manajemen Informatika*, vol. 6, no. 1, pp. 198-207, 2016.
- [27] I. M. D. Suryadinata, S. J. I. Ismail, and ..., "Implementasi Firewall dan IDS Pada Smoothwall Express," *eProceedings ...*, vol. 1, no. 2, 2015. Available: e-Proceedings of Applied Science, <https://openlibrarypublications.telkomuniversity.ac.id/index.php/appliedscience/article/view/9268>. [Diakses 8 Juni 2024, 14:02:30 WIB].
- [28] S. Khadafi *et al.*, "Sistem Keamanan Open Cloud Computing Menggunakan Ids (Intrusion Detection System) Dan Ips (Intrusion Prevention System)," 2017.
- [29] D. Kreculj, Đ. Dihovični, N. Ratković Kovačević, M. Gaborov, and M. Zajeganović, "pfSense Router and Firewall Software," *International Scientific Conference On Information Technology, Computer Science, And Data Science*, pp. 132–137, 2023.
- [30] K. Patel and P. Sharma, "A Review paper on pfsense – an Open source firewall introducing with different capabilities & customization," *International Journal of Advance Research and Innovative Ideas in Education*, vol. 3, no. 1, pp. 635–641, 2017.

- [31] D. Kumar and M. Gupta, "Implementation of Firewall & Intrusion Detection System Using pfSense To Enhance Network Security," *International Journal of Electrical Electronics & Computer Science Engineering*, pp. 131–137, 2018.
- [32] J. Coquis-Flames, H. Flor-Cunza, and A. Alva-Mantari, "Design of a pfSense-based Wireless Network to Transition from the Use of Proprietary Software in the Campus of the University of Sciences and Humanities, Lima, Peru," *International Journal of Engineering Trends and Technology*, vol. 72, no. 8, pp. 62–72, 2024.
- [33] K. Al Fikri, "Keamanan Jaringan Menggunakan Switch Port Security," vol. 5, no. 2, 2021.
- [34] Sugiyono, "Sistem Keamanan Jaringan Komputer Menggunakan Metode Watchguard Firebox Pada PT Guna Karya Indonesia," *Jurnal CKI*, vol. 9, no. 1, pp. 1–8, 2016.
- [35] I. Anugrah and R. H. Rahmanto, "Sistem Keamanan Jaringan Local Area Network Menggunakan Teknik De-Militarized Zone," 2017.
- [36] A. Yasin and I. Mohidin, "Dampak Serangan DDoS pada Software Based Openflow Switch di Perangkat HG553," *Jurnal Technopreneur (JTech)*, vol. 6, no. 2, p. 72, Nov. 2018.
- [37] M. , S. A. L. A. Kalee, "Klasifikasi Serangan Distributed Denial-of-Service (DDoS) menggunakan Metode Data Mining Naïve Bayes," 2022.
- [38] M. D. Haryanto and I. Riadi, "Analisis dan Optimalisasi Jaringan menggunakan Teknik Load Balancing (Studi Kasus Jaringan UAD Kampus 3)," *Jurnal Sarjana Teknik Informatika*, vol. 2, no. 3, pp. 172–180, 2021.
- [39] A. Yasin, E. Utami, E. Pramono, M. Teknik, I. Stmik, and A. Yogyakarta, "Pengujian Serangan Distributed Denial Of Service (Ddos) Di Jaringan Software-Defined Pada Gns3," *Jurnal Teknologi Informasi*, vol. 32, 2016.
- [40] D. Scholz, S. Gallenmüller, H. Stubbe, B. Jaber, M. Rouhi, and G. Carle, "Me love (SYN-)cookies: SYN flood mitigation in programmable data planes," *ArXiv*, 2020.
- [41] B. N. Ramkumar and T. Subbulakshmi, "Tcp Syn Flood Attack Detection and Prevention System using Adaptive Thresholding Method," *ITM Web of Conferences*, vol. 37, p. 01016, 2021.
- [42] H. Wang, D. Zhang, and K. G. Shin, "Detecting SYN flooding attacks," *Proceedings - IEEE INFOCOM*, vol. 3, no. July 2002, pp. 1530–1539, 2002.

- [43] D. Scholz, S. Gallenmüller, H. Stubbe, and G. Carle, "SYN Flood Defense in Programmable Data Planes," *EuroP4 2020 - Proceedings of the 3rd P4 Workshop in Europe, Part of CoNEXT 2020*, pp. 13–20, 2020.
- [44] C. Dilmegani, "30 Network Performance Metrics to Measure Network Health," AIMultiple. Accessed: Jun. 11, 2025. Available: AIMultiple, <https://research.aimultiple.com/network-performance-metrics/>. [Diakses 11 Juni 2025, 19:29:47 WIB]
- [45] 3GPP, "Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); General aspects of Quality of Service (QoS)," 1999.
- [46] 3GPP, "Universal Mobile Telecommunications System (UMTS); Quality of Service (QoS) concept and architecture (3GPP TS 23.107 version 5.4.0 Release 5)," 2002.
- [47] F. L. Rodríguez, U. S. Dias, D. R. Campelo, R. de O. Albuquerque, S. J. Lim, and L. J. G. Villalba, "QoS management and flexible traffic detection architecture for 5G mobile networks," *Sensors (Switzerland)*, vol. 19, no. 6, Mar. 2019.
- [48] Michell Kaleel, "Comparative Analysis Of 4.5g Lte Internet Network Quality In Manado City," *Jurnal Teknik Informatika*, 2022.
- [49] Danuri and S. Maisaroh, *Metodologi Penelitian Pendidikan*. Yogyakarta: Samudra Biru, 2019.