

BIBLIOGRAPHY

- [1] S. Bumbungan, “Peran dan Perkembangan Jaringan Internet dalam Mendukung Transformasi Digital Global,” *Bull. Netw. Eng. Informatics*, vol. 3, no. 1, pp. 11–15, 2025, doi: <https://doi.org/10.59688/bufnets.v3i1.66>.
- [2] M. M. Alamin, F. A. Jantanu, M. Raihan, Z. Ramadhan, N. F. Rahman, and R. P. Arifin, “Kualitas Jaringan Internet di Dinas Quality of Service dengan Wireshark,” *Nusant. Comput. Des. Rev.*, vol. 3, no. 1, pp. 47–53, 2025, doi: <https://doi.org/10.55732/ncdr.v3i1.1638>.
- [3] A. V. Ratri *et al.*, “Optimasi Management Bandwidth Menggunakan Teknik Traffic Shaping pada Jaringan SMKN 1 Purbolinggo,” *JIKI (Jurnal Ilmu Komput. dan Inform.)*, vol. 6, no. 2, pp. 232–242, 2025, doi: <https://doi.org/10.24127/jiki.v6i2.10124>.
- [4] F. Dwilaksono, H. E. Wahanani, and M. Idhom, “Implementasi Manajemen Bandwidth Menggunakan Metode Queue Tree dengan PCQ di SMK Negeri 1 Surabaya,” *J. Ilm. Tek. Inform. dan Komun.*, vol. 5, no. 2, pp. 58–72, 2025, doi: <https://doi.org/10.55606/juitik.v5i2.1029>.
- [5] A. Mareta, I. Sakti, and H. Santoso, “Beyond Traditional QoS Management : Harnessing Machine Learning for Predictive Network Service Optimization,” *Sink. J. Dan Penelit. Tek. Inform.*, vol. 9, no. 2, pp. 800–813, 2025, doi: [10.33395/sinkron.v9i2.14664](https://doi.org/10.33395/sinkron.v9i2.14664).
- [6] A. Alzi and H. Haeruddin, “Pengaruh Manajemen Bandwidth Terhadap QoS dengan Standar TIPHON Pada Alur Monitoring SNMP,” *J. Ilm. Teknol. Inf. Asia*, vol. 17, no. 1, pp. 9–20, 2023.
- [7] M. F. Manao, A. Sinaga, and S. Aripin, “Penerapan Metode Queue Tree Dalam Manajemen Bandwidth Berbasis Mikrotik Untuk Memudahkan Pembelajaran Dalam Menghadapi Dampak Covid-19,” *J. Glob. Tecnol. Comput.*, vol. 1, no. 3, pp. 115–121, 2022, doi: <https://doi.org/10.47065/jogtc.v1i3.2111>.
- [8] K. A. Memon, S. S. Jaffer, M. A. Qureshi, and K. K. Qureshi, “Dynamic bandwidth allocation in time division multiplexed passive optical networks : a dual-standard analysis of ITU-T and IEEE standard algorithms,” *PeerJ*

- Comput. Sci.*, vol. 11, pp. 1–48, 2025, doi: 10.7717/peerj-cs.2863.
- [9] A. Feng, D. Dong, F. Lei, J. Ma, E. Yu, and R. Wang, “In-network aggregation for data center networks: A survey,” *Comput. Commun.*, vol. 198, pp. 63–76, 2023, doi: <https://doi.org/10.1016/j.comcom.2022.11.004>.
 - [10] M. Al Batahari, M. Nasar, and Y. Al Shabibi, “Adaptive Bandwidth Management for Traffic Surge and Device Hunger Scenarios in LAN Environments,” *East J. Hum. Sci.*, vol. 1, no. 5, 2025, doi: <https://doi.org/10.63496/ejhs.Vol1.Iss5.154>.
 - [11] M. F. Alwan, A. A. Widodo, and R. Hariyanto, “Prediksi Beban Bandwidth Menggunakan Metode Fuzzy Inference System dan Time Series pada Internet Service Provider (ISP),” *BIMASAKTI J. Ris. Mhs. Bid. Teknol. Inf.*, vol. 5, pp. 31–44, 2023, doi: <https://doi.org/10.21067/bimasakti.v5i2.8945>.
 - [12] A. U. T. Syahar, “Penerapan Metode Fuzzy Sugeno Untuk Optimasi Penggunaan Bandwidth,” *TECNOSCIENZA*, vol. 7, no. 2, 2023.
 - [13] M. A. C. Chanpal, D. I. S. Manurung, and D. S. Pamungkas, “Performance Comparison of Fuzzy Mamdani and Sugeno in Curtain and Lighting Control,” *J. Appl. Electr. Eng.*, 2025.
 - [14] M. Szczepański and J. Marciniak, “Comparative analysis of fuzzy controllers and machine learning in adaptive e-learning systems,” *Sci. Procedia Comput. Sci.*, vol. 270, pp. 2939–2948, 2025, doi: [10.1016/j.procs.2025.09.416](https://doi.org/10.1016/j.procs.2025.09.416).
 - [15] A. S. Telly Indrawa, Ruuhwan, “Perbandingan metode Simple Queue dan Metode Per Connection Queue untuk Manajemen Bandwidth (Studi Kasus SMP Negeri 2 Singaparna),” *J. Elektro Inform. SWADHARMA*, vol. 4, pp. 58–65, 2024.
 - [16] R. N. Duri and M. Juansen, “Analisis Perbandingan Quality of Service dengan Standarisasi Tiphon : Metode Simple Queue dan Per Connection Queue,” *J. Process.*, vol. 20, no. 1, pp. 1–17, 2025, doi: <https://doi.org/10.33998/processor.2025.20.1.2027>.
 - [17] M. Velasco, J. M. Fuertes, C. Lin, P. Marti, and S. Brandt, “A control approach to bandwidth management in networked control systems,” *IEEE*

- Ind. Electron. Soc.*, vol. 3, 2004, doi: 10.1109/IECON.2004.1432166.
- [18] D. Pompili and F. D. Priscoli, "A Closed-loop Fuzzy Traffic Controller for Fair Bandwidth Sharing," *SIGBED Rev.*, vol. 5, pp. 1–6, 2008, doi: <https://doi.org/10.1145/1399583.1399588>.
- [19] I. W. Lahiya and F. Arifin, "Implementation of FDSS (Fuzzy Decision Support System) Sugeno Model in Optimizing Bandwidth Requirement Management of Web-Based Networks," *Elinvo (Electronics, Informatics, Vocat. Educ.*, vol. 8, no. 2, pp. 171–181, 2023, doi: 10.21831/elinvo.v8i2.57557.
- [20] F. Mahardika and K. N. Hidayat, "Diagnosa Kualitas Jaringan Internet menggunakan Logika Fuzzy (Studi Kasus : Balai Besar Wilayah I Medan)," *Syntax J. Softw. Eng. Comput. Sci. Inf. Technol.*, vol. 2, no. 1, pp. 86–89, 2021.
- [21] F. W. Christanto, A. F. Daru, and A. Kurniawan, "Metode PCQ dan Queue Tree untuk Implementasi Manajemen Bandwidth Berbasis Mikrotik," *J. RESTI (Rekayasa Sist. dan Teknol. Informasi)*, vol. 5, no. 2, pp. 407–412, 2021, doi: 10.29207/resti.v5i2.3026.
- [22] N. Jiantoro and R. C. N. Santi, "Implementasi manajemen bandwidth mikrotik dengan metode pcq pada lembaga pendidikan," *INTECOMS J. Inf. Technol. Comput. Sci.*, vol. 8, no. 5, 2025.
- [23] F. E. Janitra *et al.*, "METODE PENELITIAN EKSPERIMENTAL," *J. Kesehat.*, vol. 11, no. 2, pp. 67–69, 2024, doi: <https://doi.org/10.35913/jk.v11i2.453>.
- [24] W. I. Ainiyah and A. Sholihuddin, "Efektivitas Media Audio Visual Berbasis Aplikasi Spinning Wheel untuk Meningkatkan Hasil Belajar Maharoh Kalam Kelas VIII MTs Ma'murotul Husna," *AL WASIL*, vol. 03, no. 1, 2025, doi: 10.30762/alwasil.v3i1.5011.
- [25] K. Ogata, *Modern Control Engineering Fifth Edition*. Pearson, 2010.
- [26] A. D. Ramadhan, I. Iskandar, Novriyanto, and Pizaini, "Evaluasi Peforma Jaringan Internet Menggunakan Metode QoS," *KLIK Kaji. Ilm. Inform. dan Komput.*, vol. 3, no. 6, pp. 996–1004, 2023, doi: 10.30865/klik.v3i6.892.
- [27] N. S. Nise, *Control System Engineering Eight Edition*. John Wiley & Sons,

2025. [Online]. Available: <https://books.google.co.id/books?id=nF1rEQAAQBAJ&printsec=frontcover#v=onepage&q&f=false>
- [28] J. Doyle, B. Francis, and A. Tannenbaum, "Feedback Control Theory," 1990.
- [29] K. Somsuk and S. Khummanee, "Dynamic Predictive Feedback Mechanism for Intelligent Bandwidth Control in Future SDN Networks," *Network*, pp. 1–23, 2025, doi: <https://doi.org/10.3390/network5040054>.
- [30] S. H. N. Ginting *et al.*, *Pengantar Jaringan Komputer*. PT. MIFANDI MANDIRI DIGITAL, 2023.
- [31] W. L. Army *et al.*, *Teknologi Jaringan Komputer*. Widina Bhakti Persada Bandung, 2022.
- [32] M. A. Bin Jalil, "A Brief Overview : Computer Network Based on Physical and Logical Topology," *Int. J. Res. Appl. Sci. Eng. Technol.*, vol. 10, no. 3, 2022, doi: <https://doi.org/10.22214/ijraset.2022.40833>.
- [33] I. Asrowardi, "Skema Pengalamatan Ip Address Pada Desain Jaringan Komputer Local Area Network (Lan) Menggunakan Metode Subnetting," *J. Ilm. Esai*, 2008, doi: <https://doi.org/10.25181/esai.v2i2.1359>.
- [34] T. Roney and M. E. Dooley, *IP Address Manajement*. 2021. [Online]. Available: <https://books.google.co.id/books?id=g84OEAAAQBAJ&lpq=PA19&ots=GvBvsRtRgv&dq=ip address&lr&pg=PA1#v=onepage&q=ip address&f=false>
- [35] T. B. Rahayu and I. Suharjo, "Implementasi BGP dengan RPKI Pada Jaringan PT . Bintang Mataram Teknologi Menggunakan Mikrotik Router OS," *J. Fasilkom*, vol. 14, no. 2, pp. 293–300, 2024, doi: <https://doi.org/10.37859/jf.v14i2.6968>.
- [36] Course-net, "Throughput Adalah: Pengertian, Fungsi dan Kelebihannya." [Online]. Available: <https://course-net.com/blog/throughput-adalah-pengertian-fungsi-dan-kelebihannya/>
- [37] A. S. Tanenbaum and D. J. Wetherall, *Computer Networks Fifth Edition*. 2011. [Online]. Available: <https://www.cs.csubak.edu/~jyang/Computer-Networks---A-Tanenbaum---5th-edition.pdf>

- [38] R. K. Paredes and A. A. Hernandez, “Designing an Adaptive Bandwidth Management for Higher Education Institutions,” *International J. Comput. Sci. Res.*, vol. 2, no. 1, pp. 17–35, 2018, doi: 10.25147/ijcsr.2017.001.1.22.
- [39] A. Makmur and I. Jasman, “Optimalisasi manajemen bandwidth jaringan komputer menggunakan action research pada dinas komunikasi dan informatika kota palopo,” *J. Inf. Technol. Comput. Sci.*, vol. 6, no. 2, 2023.
- [40] E. I. N. Al Hadad and A. Prapanca, “Analisis Kualitas Layanan Jaringan Internet Menggunakan Metode Quality Of Service (QoS) Dan Reliability , Maintainability And Availability (RMA) (Studi Kasus : SMK Negeri 3 Jombang),” *J. Informatics Comput. Sci.*, vol. 04, no. 04, pp. 414–422, 2023.
- [41] D. Chirzah and H. M. Jumasa, “Strategi Pengelolaan Bandwidth Adaptif Pada Jaringan Komputer Berbasis Virtualisasi,” *J. INTEK (Informatika dan Teknol. Informasi)*, vol. 8, no. 1, pp. 33–43, 2025.
- [42] Y. Y. S. Bangko, J. D. Irawan, and D. Rudhistiar, “Optimasi Manajemen Bandwidth di SMK Nasional Malang Menggunakan Metode HTB dan Double Exponential Smoothing,” *JIKA (Jurnal Inform. Univ. Muhammadiyah Tangerang)*, vol. 9, no. 1, pp. 75–84, 2025.
- [43] A. Ardiansyah and F. Y. Pamuji, “Penerapan Standar TIPHON untuk Kinerja Quality of Service Jaringan Internet (Studi Kasus di Jaringan Alfabet),” *JATI J. Mhs. Tek. Inform.*, vol. 9, no. 5, pp. 8530–8537, 2025, doi: <https://doi.org/10.36040/jati.v9i5.15112>.
- [44] I. Protocol, “Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); General aspects of Quality of Service (QoS),” vol. 1, pp. 1–37, 1999.
- [45] S. Kenat, “Analisis Keamanan Jaringan Menggunakan Mikrotik Pada Lab Komputer STMIK Widuri,” *Neptunus J. Ilmu Komput. dan Teknol. Inf.*, vol. 2, no. 3, pp. 16–24, 2024, doi: <https://doi.org/10.61132/neptunus.v2i3.177>.
- [46] A. Q. Mohammed and R. F. Ghani, “Network Traffic Classification to Improve Quality of Service (QoS),” *AIP Conf. Proc.*, vol. 3282, 2025, doi: <https://doi.org/10.1063/5.0264880>.
- [47] T. Rahman, Sumarna, and H. Nurdin, “Analisis Performa RouterOS MikroTik pada Jaringan Internet,” *J. Inovtek Polbeng - Seri Inform.*, vol. 5,

pp. 178–192, 2020.

- [48] “Mikrotik Wiki.” [Online]. Available: <https://help.mikrotik.com/>
- [49] A. Prihantara, A. A. Hartono, and H. Annaisaburi, “Efektifitas Implementasi Mangle Firewall pada Manajemen Bandwidth di Politeknik Negeri Cilacap Melalui Pendekatan PPDIOO”.
- [50] A. Zulfikar and Y. Akbar, “Automation of Mikrotik Router Setting Configuration Backup Using Ansible with Network DevOps Method Otomasi Backup Konfigurasi Setingan Router Mikrotik Menggunakan Ansible dengan Metode Network DevOps,” *MALCOM Indones. J. Mach. Learn. Comput. Sci.*, vol. 5, no. January, pp. 57–66, 2025, doi: <https://doi.org/10.57152/malcom.v5i1.1591>.
- [51] M. R. Al Ridho, L. Widyawati, and L. Z. Azhar, “Implementasi Traffic Shapping dengan Firewall Mangle dan Queue Tree untuk Meningkatkan Efisiensi Bandwidth di SDN,” *J. Teknol. Kesehatan, dan Sos.*, vol. 1, no. 1, pp. 35–46, 2025, doi: 10.30812/juteks.v1i1.5130.
- [52] A. Demers, S. Keshavt, and S. Shenker, “Analysis and simulation of a fair queueing algorithm,” *Assoc. Comput. Mach.*, 1989, doi: 10.1145/75246.75248.
- [53] M. Wira, H. Kusuma, and R. Pramudita, “Implementasi Menggunakan Peer Connection Queue dan Simple Queue dengan Network Development Life Cycle,” *JATI J. Mhs. Tek. Inform.*, vol. 8, no. 5, pp. 11036–11042, 2024, doi: <https://doi.org/10.36040/jati.v8i5.10984>.
- [54] W. Wijayanto, F. M. Sarimole, and M. B. Yel, “Implementasi Mikrotik untuk Kebutuhan Access Internet Pelanggan UMKM Warung Kopi Opung Kemayoran Jakarta Pusat,” *J. Artif. Intell. Digit. Bus.*, vol. 5, no. 1, pp. 2212–2219, 2026.
- [55] B. A. Prakosa, Y. Afrianto, S. Agustiyani, and I. H. Setiadi, “Ingénierie des Systèmes d ’ Information Evaluating Bandwidth Management Techniques on Mikrotik Routers : A Multiple Linear Regression Approach,” *IETA Int. Inf. Eng. Technol. Assoc.*, vol. 29, no. 4, pp. 1561–1572, 2024.
- [56] L. A. Zadeh, “Fuzzy Sets *,” *Inf. Control*, vol. 353, pp. 338–353, 1965.
- [57] S. S. Manek, G. S. Mada, and Y. P. K. Kelen, “PRE-ECLAMPSIA

DIAGNOSIS EXPERT SYSTEM USING FUZZY INFERENCE SYSTEM MAMDANI,” *Techno Nusa Mandiri J. Comput. Inf. Technol.*, vol. 20, no. 2, pp. 80–88, 2023, doi: <https://doi.org/10.33480/techno.v20i2.4622>.

- [58] M. A. Adiguna and B. W. Widagdo, “Implementasi Logika Fuzzy pada Pengaruh Penggunaan Aplikasi Simulasi Cisco Packet Tracer Terhadap Gairah Belajar Mahasiswa,” *Komputa J. Ilm. Komput. dan Inform.*, vol. 12, no. 1, 2023, doi: <https://doi.org/10.34010/komputa.v12i1.9109>.
- [59] A. Arifin and R. Kurniawan, “Implementasi Fuzzy Inference System pada Model Pendukung Penilaian Kondisi Gizi dan Pertumbuhan Balita,” *Cybersp. J. Pendidik. Teknol. Inf.*, vol. 8, pp. 25–37, 2024.
- [60] H. Munte, A. Pramudyansyah, and Umryah, “Perbandingan Metode Fuzzy Mamdani Dengan Fuzzy Sugeno untuk Evaluasi Kinerja Karyawan,” *Comput. J. Comput. Sci. Inf. Syst.*, vol. 1, pp. 1–12, 2024.
- [61] E. Cox, *Fuzzy Systems Handbook*. Boston: 1994, 1994.
- [62] Yunita, D. P. S. Mayasari, and A. Rahman, “Implementasi Logika Fuzzy Metode Sugeno untuk Penentuan Tingkat Kepuasan Pelanggan,” *J. Inov. Komput.*, vol. 1, no. 2, 2025, doi: <https://doi.org/10.71200/inokom.v1i2.36>.
- [63] A. E. Setiawan and A. Afdhalludin, “Analisa Metode Fuzzy Mamdani Dan Sugeno Untuk Deteksi Daerah Rentan Banjir : Studi Kasus Kecamatan Pringsewu,” *Aisyah J. Informatics Electr. Eng.*, vol. 1, pp. 72–80, 2019, doi: <https://doi.org/10.30604/jti.v1i1.12>.
- [64] K. R. Srinath, “Python – The Fastest Growing Programming Language,” pp. 354–357, 2017.
- [65] H. Prasetyo and G. P. Utama, “Otomasi pengaturan jaringan lan berbasis mikrotik dengan bahasa pemrograman python,” *Semin. Nas. Mhs. Fak. Teknol. Inf.*, vol. 4, no. September, pp. 130–137, 2025.
- [66] M. Allman, V. Paxson, and E. Blanton, “TCP Congestion Control,” *RFC 5681*, pp. 1–18, 2009, doi: 10.17487/RFC5681.
- [67] A. Wijaya *et al.*, “Implementasi Quality of Service (QoS) menggunakan Wireshark pada Jaringan Wireless LAN,” *Digit. Transform. Technol.*, vol. 4, no. 1, pp. 296–303, 2024.
- [68] M. N. Hamidah, R. F. Tias, and R. F. Zainal, “Quality of Service (QoS)

Analysis using Wireshark on the LAN Network at An Najiyah High School Surabaya,” *J. Mandiri IT*, vol. 12, no. 4, pp. 222–228, 2024.

- [69] D. Aribowo and M. A. Usman, “Sistem Informasi Akademik Dengan Model Pengembangan Waterfall,” *Semin. Nas. Tek. Elektro UIN Sunan Gunung Djati Bandung (SENER 2021)*, no. November 2021, pp. 228–245, 2021.