

DAFTAR PUSTAKA

- A. N. Dharsandiya and R. M. Patel, "A review on MAC protocols of Vehicular Ad Hoc Networks," Proc. 2016 IEEE Int. Conf. Wirel. Commun. Signal Process. Networking, WiSPNET 2016, pp. 1040–1045, 2016, doi: 10.1109/WiSPNET.2016.7566295.
- A. Triwinarko, I. Dayoub, M. Zwingelstein-Colin, M. Gharbi, and B. Bouraoui, "A PHY/MAC cross-layer design with transmit antenna selection and power adaptation for receiver blocking problem in dense VANETs," Veh. Commun., vol. 24, p. 100233, 2020, doi: 10.1016/j.vehcom.2020.100233.
- Anisia, R., Munadi, R., & Negara, R. M. (2016). Analisis Performansi Routing Protocol OLSR dan AOMDV pada Vehicular Ad Hoc Network (VANET). *Jurnal Nasional Teknik Elektro Vol 5, No. 1, ISSN: 2302 - 2949*, 87 - 97.
- Aperta, Winana Libar, dkk. 2017. Analisis Hidden Node Pada Jaringan Wireless Fidelity (Wi-Fi) di Telkom University. Skripsi Telkom University
- Atmawidjaja, Endra S. dkk. (2015). Kajian Pengembangan Smart City di Indonesia. Jakarta : Direktorat Jenderal Penataan Ruang Kementerian Pekerjaan Umum
- Aziza, R. N., & Puji Catur Siswipraptini, R. C. (2017). Protokol Routing pada VANET: Taksonomi dan Analisis Perbandingan antara DSR, AODV, dan TORA. *JURNAL ILMIAH FIFO Vol IX No. 2*, 98 - 109.
- Aziza, Rosida Nur. 2016. JARINGAN AD-HOC VEHICULAR (VANET) : TINJAUAN TENTANG ARSITEKTUR, KARAKTERISTIK, APLIKASI, DAN PROTOKOL MEDIUM ACCESS CONTROL (MAC). *Jurnal PETIR Vol. 9 No. 1*. Sekolah Tinggi Teknik PLN: Jakarta. doi : <https://doi.org/10.33322/petir.v9i1.188>
- Behrisch, M., Krajzewicz, D., (eds.), M.W., 2014. Simulation of Urban Mobility: First International Conference. SUMO 2013, Berlin, Germany, May 15-1, 2013. Revised Selected Papers, 1st ed, Lecture Notes in Computer Science 8594 Information Systems and Applications, Incl. Internet/Web, and HCI. Springer-Verlag Berlin Heidelberg.
- Bitam, S., Mellouk, A., 2014. Bio-inspired Routing Protocols for Vehicular Ad-Hoc Network, 1st ed, FOCUS Series. Wiley-ISTE.

- Chhabra, M., Gupta, B., & Almomani, A. (2013). A Novel Solution to Handle DDOS Attack in MANET. *Journal of Information Security*, 165 - 179.
- Clausen, & Jacquet. (2003). Optimized Link State Routing Protocol. 8 - 9.ed Noori. 2022. Effect of Speed on the Performance of VANET Routing Protocol. Northern Technical University: International Journal of Mechanical Engineering.
- Erritali, M. dan B.E. Ouahidi. (2013). Performance Evaluation of Ad-hoc Routing Protocols in VANETs. IJACSA Special Issue on Selected Papers from Third International Symposium on Automatic Amazigh Processing: 33-38.
- ETSI. (1999). *Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON); General aspects of Quality of Service (QoS)*. France: European Telecommunications Standards Institute.
- Fadillah, M. R. (2018). *Analisis Quality of Service Routing Protocol AODV dengan Metode Random Waypoint Mobility pada Manet Menggunakan NS-2 Simulator*. Jakarta: Universitas Islam Negeri Syarif Hidayatullah.
- Gihan, Oshada. 2019. Solving the Hidden Terminal Problem using RTS/CTS mechanism. Diakses 3 Agustus 2022, dari <https://medium.com/@oshadaamila.15/solving-the-hidden-terminal-problem-using-rts-cts-mechanism-a5c5d335c59b>
- Hidayah, R. N., Indrabayu, & Areni, I. S. (2018). Analisis Performansi Protokol Routing Proaktif pada Jaringan Mobile Adhoc. *Jurnal JPE, Vol. 22, No. 2*, 120 - 128.
- JOSM. (2015, March 11). JOSM. Retrieved April 5, 2022, from wiki.openstreetmap: <https://wiki.openstreetmap.org/wiki/JOSM>
- Kaisar A. (2016). 'Analisis Kinerja Lalu Lintas Jalan pada Jaringan Jalan Arteri di Kota Makassar Berbasis SIG'. Universitas Hasanuddin, Makassar.
- Krajzewicz, D. et al. (2012) 'Recent Development and Applications of SUMO - Simulation of Urban Mobility Recent Development and Applications of SUMO – Simulation of Urban MObility', (April 2015).
- Liang, W., Z. Li, H. Zhang, S. Wang, and R. Bie, Vehicular Ad Hoc Networks: Architectures, Research Issues, Methodologies, Challenges, and Trends, International Journal of Distributed Sensor Networks, Volume 2015, pp.1-11.
- M. R. Ghori, K. Z. Zamli, N. Quosthoni, M. Hisyam, and M. Montaser, "Vehicular Ad-hoc Network (VANET): Review," 2018 IEEE Int. Conf. Innov. Res. Dev., pp. 1–6, 2018.

- Miao, L., K. Djouani., B. Jacobus dan Y. Hamam. 2013. Performance Evaluation of IEEE 802.11p MAC Protocol in VANETs Safety Applications. IEEE Wireless Communications and Networking Conference (WCNC), 1663-1668. French South African Institute of Technology (F'SATI), Tshwane University of Technology
- Nakamura, M., Kitani, T., Sun, W., Shibata, N., Yasumoto, K. and Ito, M. 2010. A method for improving data delivery efficiency in delay tolerant vanet with scheduled routes of cars. pp. 1
- NSNAM. (2011). About. Retrieved April 5, 2022, from NS-3: <https://www.nsnam.org/about/what-is-ns-3/>
- Pradana, Puji Dwika, dkk. 2017. Evaluasi Performansi Protokol Routing DSR dan AODV pada Simulasi Jaringan Vehicular Ad-Hoc Network (VANET) untuk Keselamatan Transportasi dengan Studi Kasus Mobil Perkotaan. Vol.4, No.2 Agustus 2017 | Page 1996, ISSN : 2355-9365
- Pramadya, Galuh Rega. 2011. Analisa Sistem Komunikasi Antar Kendaraan Menggunakan WAVE (Wireless Access Vehicular Environment) dengan Modulasi BPSK. Politeknik Elektronika Negeri Surabaya: Surabaya. Corpus ID: 109809589
- Rajhi, Mohammed, dkk. 2021. Comparison and Analysis Performance in Topology Based Routing Protocols in Vehicular Ad-hoc Network (VANET). University of California Santa Cruz Department of Computer Science and Networking: IEEE
- Ramm, F., Topf, J., 2010. OpenStreetMap: Using and Enhancing the Free Map of kahis
- Rathore, N.C., S.Verma, R.S.Tomar, G.S.Tomar, CMAC: A Cluster Based MAC Protocol for VANETs, 2010 International Conference on Computer Information Systems and Industrial Management Applications (CISIM), pp.563-568.
- Sahabuddin. 2020. Optimization Of The 5G VANET Routing Protocol on AODV Communication with Static Intersection Node. Sekolah Program Pasca sarjana universitas Hasanuddin
- Sami, MohammSudha, V. and Aroquiaraj, D.I.L. (2018) 'Comparative Study of Routing Protocol using Emergency Vehicle in VANET', *International Journal of Engineering Research & Technology*, 5(17). Available at: <https://www.ijert.org/research/comparative-study-of-routing-protocol-using-emergency-vehicle-in-vanet-IJERTCONV5IS17023.pdf>, <https://www.ijert.org/comparative-study-of-routing-protocol-using-emergency-vehicle-in-vanet> (Accessed: 29 November 2021).

- Seema. 2022. Simulation-Based Performance Evaluation of VANET Routing Protocols Under Indian Traffic Scenarios. Bhaskaracharya College of Applied Sciences: ICIC International
- Sulsel, D. P. (2021). *Badan Pusat Statistik*. Retrieved April 11, 2022, from Jumlah Kendaraan Bermotor Menurut Kabupaten/Kota dan Jenis Kendaraan di Provinsi Sulawesi Selatan (unit), 2021: https://www.bps.go.id/indikator/indikator/view_data_pub/7300/api_pub/V2w4dFkwdFNLNU5mSE95Und2UDRMQT09/da_10/1
- Suman, M. (2019) ‘A comparative study on routing protocols for VANETs’.
- Teixeira, F.A., V.F. e Silva,, J.L.Leoni, J.F. Mace-do, J.M.S.Nogueira, Vehicular Networks Using IEEE 802.11p Standard: An Experimental Analysis, Vehicular Communications 1, 2014, pp 91-96
- X. Wang, S. Mao, and M. X. Gong, “An Overview of 3GPP Cellular Vehicle-to-Everything Standards,” *GetMobile Mob. Comput. Commun.*, vol. 21, no. 3, pp. 19–25, 2017, doi: 10.1145/3161587.3161593.

LAMPIRAN

Lampiran 1 : Nilai Hasil Simulasi

1. Nilai hasil simulasi skenario 50 node pada protokol routing AODV

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	1373	1190	183	86.00%	19.338	64.11622222
36	6604	6045	559	91.00%	3.30777	553.1241029
54	10740	9860	880	91.00%	2.49834	697.5352552
72	15302	14054	1248	91.00%	1.96937	908.1340213
90	19402	17762	1640	91.00%	1.64697	1134.516744
108	25319	23187	2132	91.00%	1.43324	1452.548416
126	29754	27345	2409	91.00%	1.27387	1621.937167
144	34416	31696	2720	92.00%	1.36769	1767.260594
162	38263	35235	3028	92.00%	1.00248	1860.06362
180	43702	40251	3451	92.00%	0.814124	2060.757737
Jumlah	224875	206625	18250	908.00%	34.651854	12119.99388
Rata Rata	22487.5	20662.5	1825	90.80%	3.4651854	1211.999388

2. Nilai hasil simulasi skenario 100 node pada protokol routing AODV

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	8000	6786	1214	84.00%	7.56365	1584.811949
36	14335	12111	2224	84.00%	7.67988	2102.646438
54	22846	18929	3917	82.00%	4.16806	3085.626604
72	35565	29298	6267	82.00%	2.46122	4570.667722
90	44581	36950	7631	82.00%	1.99675	5489.763165
108	54099	44676	9423	82.00%	2.31898	6569.867621
126	62546	51760	10786	82.00%	2.49751	7455.965585
144	70625	58625	12000	83.00%	2.50891	8321.34348
162	76789	63991	12798	83.00%	2.05324	8842.944914
180	83596	70037	13559	83.00%	1.50222	9412.215461
Jumlah	472982	393163	79819	827.00%	34.75042	57435.85294

Rata Rata	47298.2	39316.3	7981.9	82.70%	3.475042	5743.585294
-----------	---------	---------	--------	--------	----------	-------------

3. Nilai hasil simulasi skenario 150 node pada protokol routing AODV

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	7377	5720	1657	77.00%	6.6855	1536.072064
36	25032	19390	5642	77.00%	3.99113	5399.736052
54	42029	31941	10088	75.00%	3.66187	7638.672824
72	57244	43676	13568	76.00%	2.9728	9741.245642
90	67290	51535	15755	76.00%	2.76522	10964.97606
108	84625	62971	21654	74.00%	1.84246	13491.93374
126	96323	71187	25136	73.00%	1.72423	15082.00541
144	107670	80170	27500	74.00%	1.61397	16796.58391
162	120327	89905	30422	74.00%	1.50457	18846.47972
180	129400	96989	32411	74.00%	1.47542	19950.94394
Jumlah	737317	553484	183833	750.00%	28.23717	119448.6494
Rata Rata	73731.7	55348.4	18383.3	75.00%	2.823717	11944.86494

4. Nilai hasil simulasi skenario 50 node pada protokol routing OLSR

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	561	549	12	97%	2.86219	16.65771685
36	1281	1225	56	95%	2.75855	34.71050481
54	2001	1862	139	93%	2.68032	123.365532
72	2721	2524	197	92%	2.6719	135.2596547
90	3441	3185	256	92%	2.66715	217.632052
108	4161	3830	331	92%	2.65635	230.0412546
126	4881	4477	404	91%	2.65257	297.1960799
144	5601	5148	453	91%	2.65001	328.4888955
162	6321	5817	504	92%	2.65003	420.4308413
180	7041	6519	522	92%	2.66578	435.6458864
Jumlah	38010	35136	2874	927.00%	26.91485	2239.428418

Rata Rata	3801	3513.6	287.4	92.70%	2.691485	223.9428418
-----------	------	--------	-------	--------	----------	-------------

5. Nilai hasil simulasi skenario 100 node pada protokol routing OLSR

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	561	540	21	96%	2.82937	74.2642754
36	1281	1218	63	95%	2.74367	108.3825235
54	2001	1885	116	94%	2.71565	144.0763229
72	2721	2536	185	93%	2.69199	204.8820232
90	3441	3204	237	93%	2.68939	221.9756629
108	4161	3909	252	93%	2.70653	258.9584707
126	4881	4542	339	93%	2.69858	594.1502723
144	5601	5209	392	93%	2.68536	721.8933454
162	6321	5854	467	92%	2.66695	828.1335751
180	7041	6495	546	92%	2.65904	1059.277836
Jumlah	38010	35392	2618	934.00%	27.08653	4215.994308
Rata Rata	3801	3539.2	261.8	93.40%	2.708653	421.5994308

6. Nilai hasil simulasi skenario 150 node pada protokol routing OLSR

Simulation (sec)	Total sent packets (bytes)	Total Received Packets (bytes)	Total Lost Packets (bytes)	PDR	Average Throughput (Kbps)	E2ED (sec)
18	564	515	49	91%	2.68116	157.2752532
36	1284	1203	81	93%	2.70166	246.8155847
54	2004	1869	135	93%	2.61751	353.9412743
72	2724	2556	168	93%	2.70403	512.3052961
90	3444	3237	207	93%	2.70306	676.1291678
108	4164	3928	236	94%	2.72103	794.6691751
126	4884	4552	332	93%	2.70171	1124.623892
144	5604	5162	442	92%	2.64332	1250.33871
162	6324	5757	567	91%	2.62698	1617.10229
180	7041	6495	546	92%	2.60904	1059.277836
Jumlah	38037	35274	2763	925.00%	26.7095	7792.478479

Rata Rata	3803.7	3527.4	276.3	92.50%	2.67095	779.2478479
--------------	--------	--------	-------	--------	---------	-------------

Lampiran 2 : Lembar Perbaikan Skripsi

LEMBAR PERBAIKAN SKRIPSI



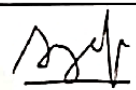
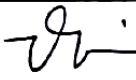
“Analisis Pengaruh Hidden Node pada Vehicular Ad Hoc Network (VANET)”

OLEH:


NUR HASANA ABUNAWAS
D121181002

Skripsi ini telah dipertahankan pada Ujian Akhir Sarjana tanggal 10 Januari 2023.
Telah dilakukan perbaikan penulisan dan isi skripsi berdasarkan usulan dari penguji dan pembimbing skripsi.

Persetujuan perbaikan oleh tim penguji:

	Nama	Tanda Tangan
Ketua	Dr. Indrabayu, S.T., M.T., M.Bus.Sys.	
Sekretaris	Dr.Eng. Wardi, S.T, M.Eng.	
Anggota	Prof.Dr.Ir. Syafruddin Syarif, MT	
	Dr.Eng.Ir. Dewiani, M.T.	

Persetujuan Perbaikan oleh pembimbing:

Pembimbing	Nama	Tanda Tangan
I	Dr. Indrabayu, S.T., M.T., M.Bus.Sys.	
II	Dr.Eng. Wardi, S.T, M.Eng.	