

Análisis de Simulaciones IoT

Resumen Ejecutivo

Este reporte presenta un análisis detallado de las simulaciones de red IoT, comparando diferentes protocolos de enrutamiento bajo diversas condiciones de red.

Estadísticas Resumen

Métrica	Unidad	Media	Mediana	Std	
throughput_promedio	Kbps	0.081360400000000001	0.077705500000000001	0.024984305062178535	0
delay_promedio	ms	0.9606154	0.884794	0.4338523925567773	0
packet_loss_promedio	ms	0.5979349	0.5713935	0.36816951859121905	0
packet_loss_paquetes	%	24.0475475	19.955143	13.013846834802923	1
packet_loss_pdr	%	75.9524525	80.044857000000001	13.013846834802923	4
packets_totales	packets	7987.3	7391.5	4658.3794617871135	
throughput_promedio	Kbps	0.751530899999999999	0.752276	0.14706672431481568	0
delay_promedio	ms	0.165370900000000002	0.0874395	0.1599959764821916	0
packet_loss_promedio	ms	0.1326559	0.0704085	0.1410441519825973	0
packet_loss_paquetes	%	52.860366	52.9341320000000005	5.683278070676975	4
packet_loss_pdr	%	47.139634	47.0658679999999995	5.683278070676975	3
packets_totales	packets	834.8	835.0	1.5362291495737215	
throughput_promedio	Kbps	1.0392	0.9552	0.2501486278195425	
delay_promedio	ms	0.5209918	0.469240499999999995	0.3038196731144315	0
packet_loss_promedio	ms	0.5389838	0.4347305	0.3938123700634098	0
packet_loss_paquetes	%	42.3218389	45.5747125000000004	9.764406715900137	2
packet_loss_pdr	%	57.678161099999999	54.4252874999999996	9.764406715900137	4
packets_totales	packets	870.0	870.0	0.0	
throughput_promedio	Kbps	0.0	0.0	0.0	
delay_promedio	ms	0.0	0.0	0.0	
packet_loss_promedio	ms	0.0	0.0	0.0	
packet_loss_paquetes	%	0.0	0.0	0.0	
packet_loss_pdr	%	0.0	0.0	0.0	
packets_totales	packets	0.0	0.0	0.0	
throughput_promedio	Kbps	0.0785602	0.078159	0.020880450588050055	0
delay_promedio	ms	0.8771708	0.8688335	0.13195299907451896	0

rtt_promedio	ms	0.5546743999999999	0.5945195	0.15693566282155247	0.15693566282155247
perdida_paquetes	%	18.5030508	17.493598	4.287652293012128	4.287652293012128
pdr	%	81.4969492	82.50640200000001	4.287652293012129	4.287652293012129
paquetes_totales	packets	7815.8	7519.5	2782.6918909573874	2782.6918909573874
throughput_promedio	Kbps	0.7456847	0.765931	0.21202568183173	0.21202568183173
delay_promedio	ms	0.1765324	0.14589200000000002	0.12530509918052019	0.12530509918052019
rtt_promedio	ms	0.17736789999999997	0.1453625	0.13283652787501635	0.13283652787501635
perdida_paquetes	%	52.6167597	52.2753085	8.354287240666244	8.354287240666244
pdr	%	47.383240300000004	47.7246915	8.354287240666244	8.354287240666244
paquetes_totales	packets	863.0	836.0	34.41801853680714	34.41801853680714
throughput_promedio	Kbps	0.7686545	0.768	0.08389102648108437	0.08389102648108437
delay_promedio	ms	0.34917539999999997	0.3334375	0.13124652231750752	0.13124652231750752
rtt_promedio	ms	0.37168959999999995	0.369093	0.14280042538255971	0.14280042538255971
perdida_paquetes	%	52.103049299999995	51.419557999999995	3.673194160078176	3.673194160078176
pdr	%	47.896950700000005	48.580442000000005	3.673194160078176	3.673194160078176
paquetes_totales	packets	951.0	951.0	0.0	0.0
throughput_promedio	Kbps	4.2803200000000001	0.0	8.34161962066254	8.34161962066254
delay_promedio	ms	10.900095539287733	0.0	16.98791105347512	16.98791105347512
rtt_promedio	ms	0.20394680142323426	0.0	0.5295991633805546	0.5295991633805546
perdida_paquetes	%	0.0	0.0	0.0	0.0
pdr	%	30.0	0.0	45.8257569495584	45.8257569495584
paquetes_totales	packets	62.7	0.0	122.1916936620489	122.1916936620489
throughput_promedio	Kbps	0.26401050000000004	0.22481	0.13009779731129195	0.13009779731129195
delay_promedio	ms	1.2110687	1.257313	0.27885627467462526	0.27885627467462526
rtt_promedio	ms	0.7837720000000001	0.809169	0.19448589379643966	0.19448589379643966
perdida_paquetes	%	39.361429099999995	39.083778499999994	8.33314220538472	8.33314220538472
pdr	%	60.63857089999999	60.916221500000006	8.333142205384718	8.333142205384718
paquetes_totales	packets	22353.8	21547.5	3593.244711956034	3593.244711956034
throughput_promedio	Kbps	10.5999314	9.338625	5.971665826962929	5.971665826962929
delay_promedio	ms	0.5716809	0.541407	0.262535078786988	0.262535078786988
rtt_promedio	ms	0.3564748	0.346235	0.1761011304437311	0.1761011304437311
perdida_paquetes	%	46.6678759	53.0562235	18.45289819415006	18.45289819415006
pdr	%	53.3321241	46.9437765	18.45289819415006	18.45289819415006
paquetes_totales	packets	10812.4	10813.0	1.8000000000000003	1.8000000000000003
throughput_promedio	Kbps	11.868075000000001	13.0545	5.987192168548209	5.987192168548209

delay_promedio	ms	1.1069098	1.2029385000000001	0.5764643027329271	0
loss_promedio	ms	0.5915535999999999	0.5087235	0.3815743235838072	0
loss_paquetes	%	40.471054699999996	41.316372	18.275432967227143	1
loss_pdr	%	59.5289453	58.683628	18.275432967227147	2
packets_totales	packets	10848.0	10848.0	0.0	
throughput_promedio	Kbps	11.680426666666667	11.468800000000002	3.8475338007265556	
delay_promedio	ms	33.21448144971672	33.422883492543505	1.4914100254596645	30.963
loss_promedio	ms	0.362567840682425	0.3319876198673122	0.1342714115632515	0.2193
loss_paquetes	%	0.0	0.0	0.0	
loss_pdr	%	100.0	100.0	0.0	
packets_totales	packets	171.1	168.0	56.360358409080405	
throughput_promedio	Kbps	0.3522278	0.2975275	0.24107940185333132	0
delay_promedio	ms	1.1645272	1.200673	0.20187229884944588	0
loss_promedio	ms	0.7852874000000001	0.7458075	0.14092230473718487	0
loss_paquetes	%	34.6273359	35.5845105	10.886071093021176	1
loss_pdr	%	65.3726641	64.4154895	10.886071093021176	4
packets_totales	packets	22335.0	22144.5	2569.9049009642363	
throughput_promedio	Kbps	8.026451100000001	7.811999999999999	3.3106185690151153	2
delay_promedio	ms	0.8659765	0.6697075	0.9046286723279613	0
loss_promedio	ms	0.6953745	0.47602049999999996	0.6928360022001239	0
loss_paquetes	%	52.059679200000005	50.8781575	11.66732147150386	3
loss_pdr	%	47.940320799999995	49.1218425	11.66732147150386	2
packets_totales	packets	10867.0	10878.5	21.693316943243143	
throughput_promedio	Kbps	8.404045700000001	7.3985140000000005	4.253995968772515	3
delay_promedio	ms	1.0639302	0.9213614999999999	0.5429366431230811	
loss_promedio	ms	0.5099402	0.507323	0.24986781273337308	0
loss_paquetes	%	49.8892854	59.456492	19.978542513504784	1
loss_pdr	%	50.11071460000001	40.543508	19.978542513504784	2
packets_totales	packets	10929.0	10929.0	0.0	
throughput_promedio	Kbps	22.152533333333334	15.633066666666666	15.542964801121082	7.9189
delay_promedio	ms	34.65509980687606	34.46383752135088	2.6096743700507075	3
loss_promedio	ms	0.24362227234903583	0.22770672774254164	0.12924286091504472	0.0671
loss_paquetes	%	0.0	0.0	0.0	
loss_pdr	%	100.0	100.0	0.0	
packets_totales	packets	324.5	229.0	227.6801484539221	

Conclusiones

Basado en el análisis de los datos, se pueden extraer las siguientes conclusiones:

- Para throughput_promedio: El protocolo DSR en la configuración mal_int mostró el mejor rendimiento con un valor promedio de 22.15 Kbps.
- Para delay_promedio: El protocolo DSR en la configuración no_mal_no_int mostró el mejor rendimiento con un valor promedio de 0.00 ms.
- Para jitter_promedio: El protocolo DSR en la configuración no_mal_no_int mostró el mejor rendimiento con un valor promedio de 0.00 ms.
- Para perdida_paquetes: El protocolo DSR en la configuración no_mal_no_int mostró el mejor rendimiento con un valor promedio de 0.00 %.
- Para pdr: El protocolo DSR en la configuración no_mal_no_int mostró el mejor rendimiento con un valor promedio de 0.00 %.
- Para paquetes_totales: El protocolo AODV en la configuración mal_no_int mostró el mejor rendimiento con un valor promedio de 22353.80 packets.