

LDAP Benchmarks and Their Implications

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Good Benchmarking Habits

- Use a practical configuration & environment
- Make the test source code available
- Run test for long enough time to be relevant
- Goals:
 - Answer your questions
 - Introduce new questions
 - Support claims without manipulating configuration

Things To Keep in Mind

- Make sure statistics are relevant and add value
- Try different configurations
- Record hardware measurements
- Visualise results!

Background

- Compare 10 different LDAP products
- Used directory containing 10 million records
- Necessary to understand strengths and weaknesses of different offerings

The Contenders

- OpenLDAP (mdb) 2.4 & 2.5
- OpenLDAP (hdb)
- OpenDJ 2.4.6
- 389 Directory Server
- ApacheDS 2.0.0-M13
- OL (mdb) W64
- Novell eDirectory 8.8SP7
- CA Directory r12 sp8
- Oracle DSEE 11.1.1.7.0
- Oracle OID 11.1.1.7.0
- Microsoft AD LDS 2012

Directory Environment

- Small virtual machine (VMWare ESX 5)
- Ubuntu 12.10 (kernel 3.5.0-23)
- Windows Server 2012
- 32gb RAM
- 512gb SSD
- SLAMD 2.0.1

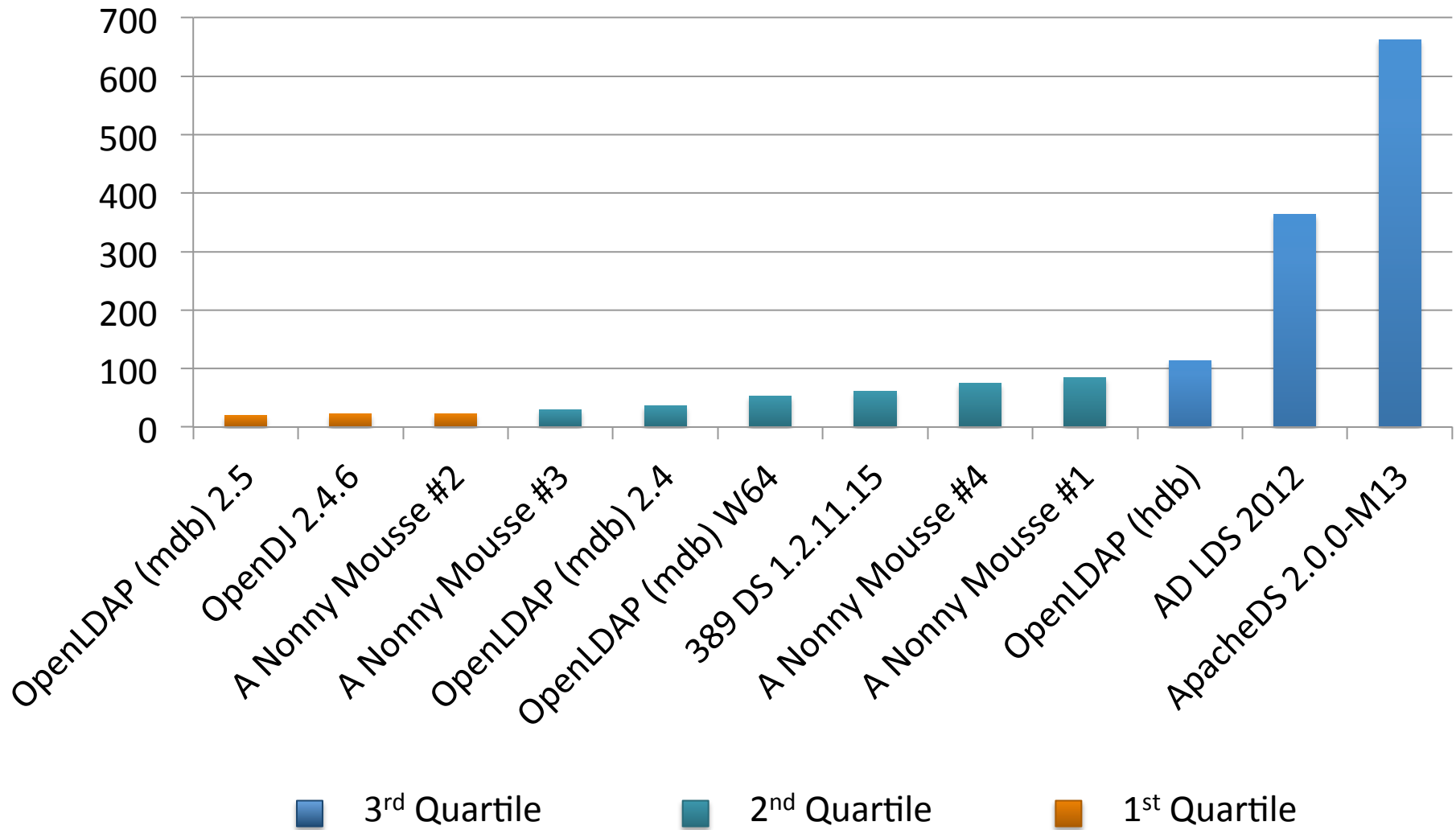
¡WARNING!

Some results are unnamed
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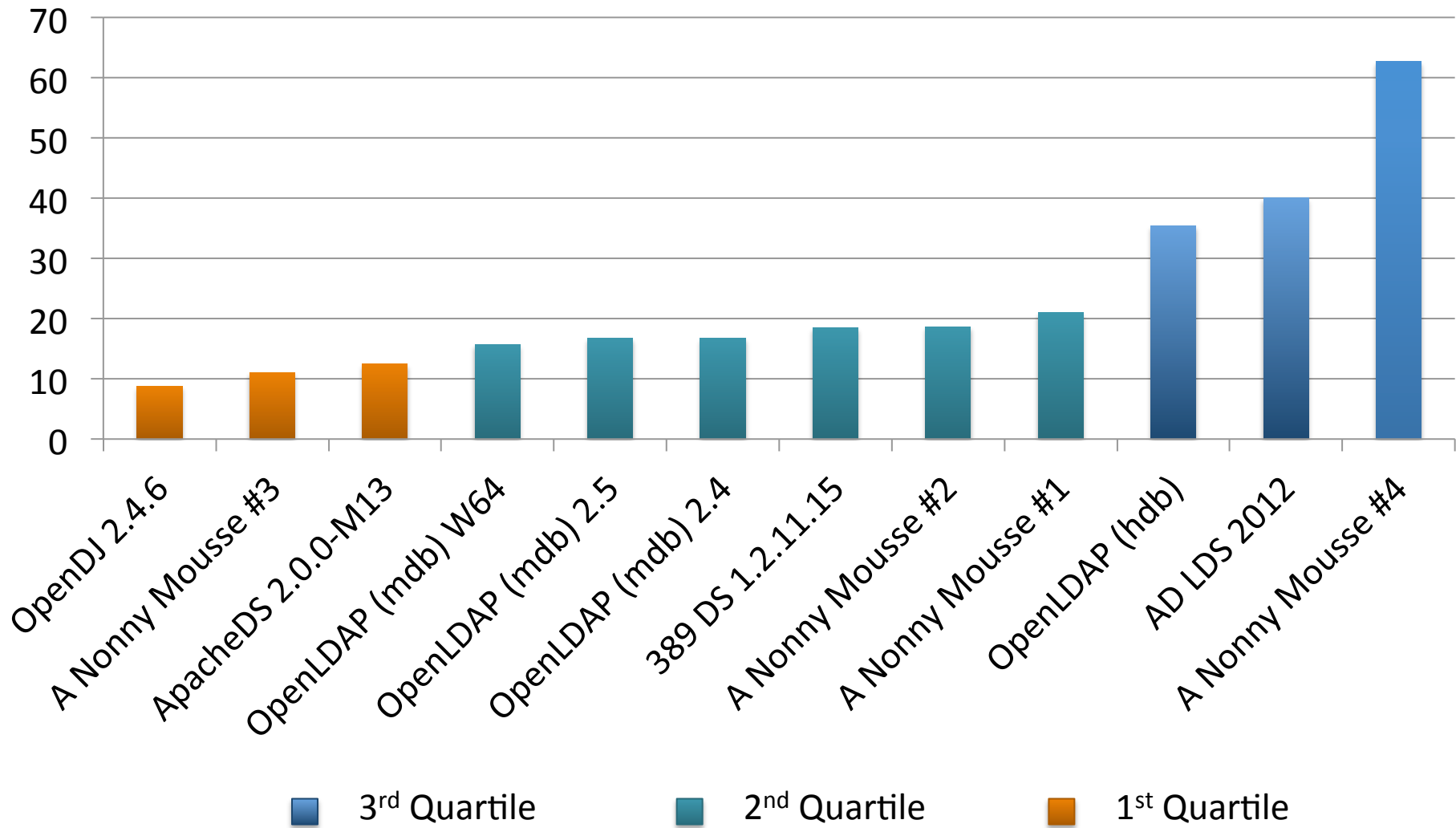
Load Information

	Load Time	Size on Disk
OpenLDAP (mdb) 2.5	20m20s	16.80gb
OpenDJ 2.4.6	22m20s	8.82 gb
A Nonny Mousse #2	22m56s	18.63 gb
A Nonny Mousse #3	30m01s	11.07 gb
OpenLDAP (mdb) 2.4	35m48s	16.80 gb
OpenLDAP (mdb) W64	52m52s	15.7 gb
389 DS 1.2.11.15	01h01m03s	18.47 gb
A Nonny Mousse #4	01h15m18s	62.74 gb
A Nonny Mousse #1	01h24m04s	20.95 gb
OpenLDAP (hdb)	01h53m39s	35.42 gb
AD LDS 2012	06h03m04s	40.02 gb
ApacheDS 2.0.0-M13	11h02m32s	12.50 gb

Load Times



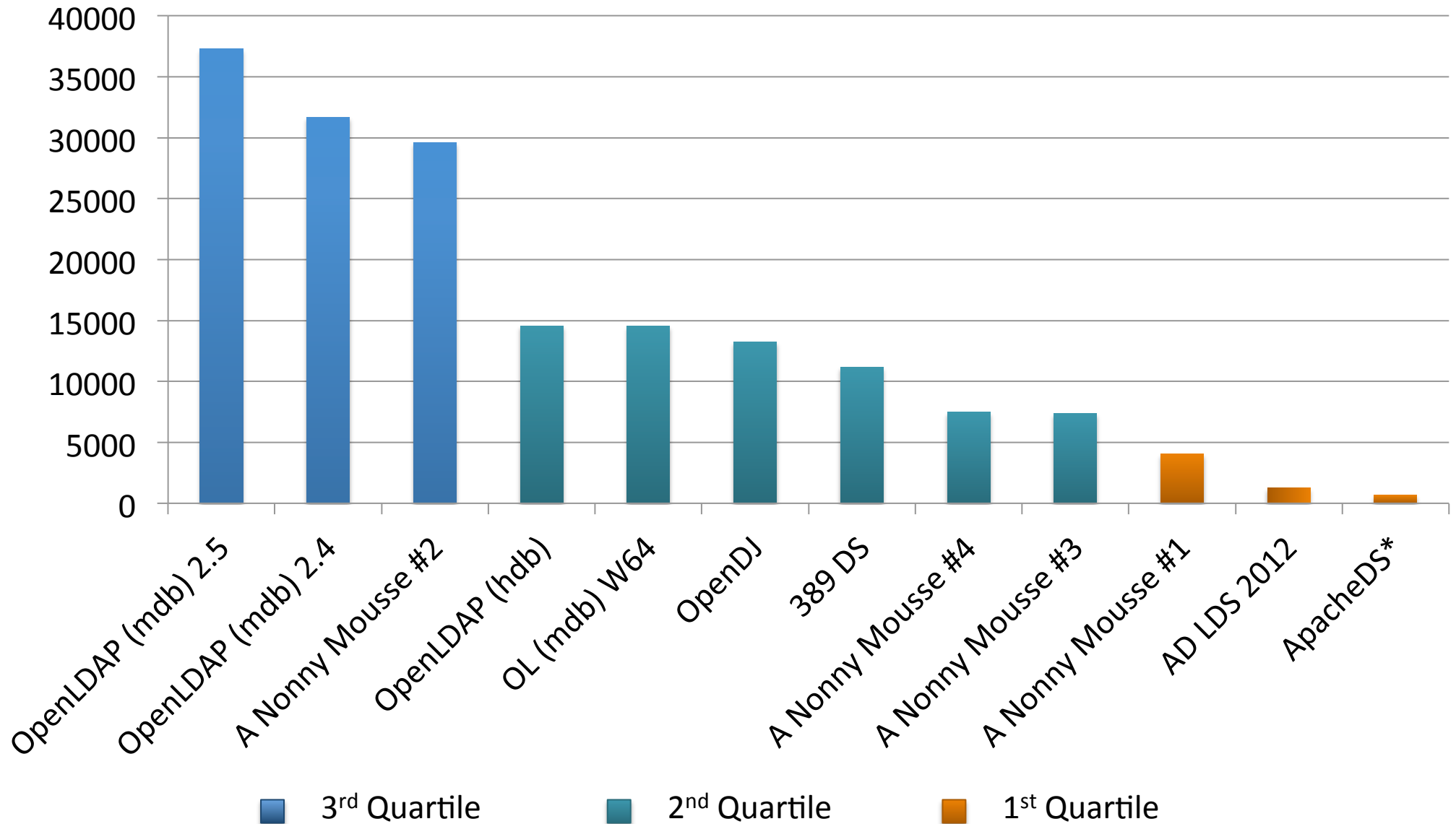
Size on Disk



Read Results (Searches)

	Searches/sec	Std dev	Avg duration (ms)	Clients	Threads
OpenLDAP (mdb) 2.5	37291.063	1308.613	1.494	8	7
OpenLDAP (mdb) 2.4	31674.019	79.936	3.025	8	12
A Nonny Mousse #2	29602.788	253.476	1.346	8	5
OpenLDAP (hdb)	14567.242	1124.873	2.465	4	9
OL (mdb) W64	14527.750	501.985	1.095	8	2
OpenDJ	13248.902	418.075	3.013	8	5
389 DS	11181.735	143.258	3.572	8	5
A Nonny Mousse #4	7484.557	341.295	6.407	8	6
A Nonny Mousse #3	7396.535	157.445	8.647	8	8
A Nonny Mousse #1	4040.282	18.411	7.915	8	4
AD LDS 2012	1282.715	51.285	3.113	4	1
ApacheDS*	687.985	2.074	23.249	8	2

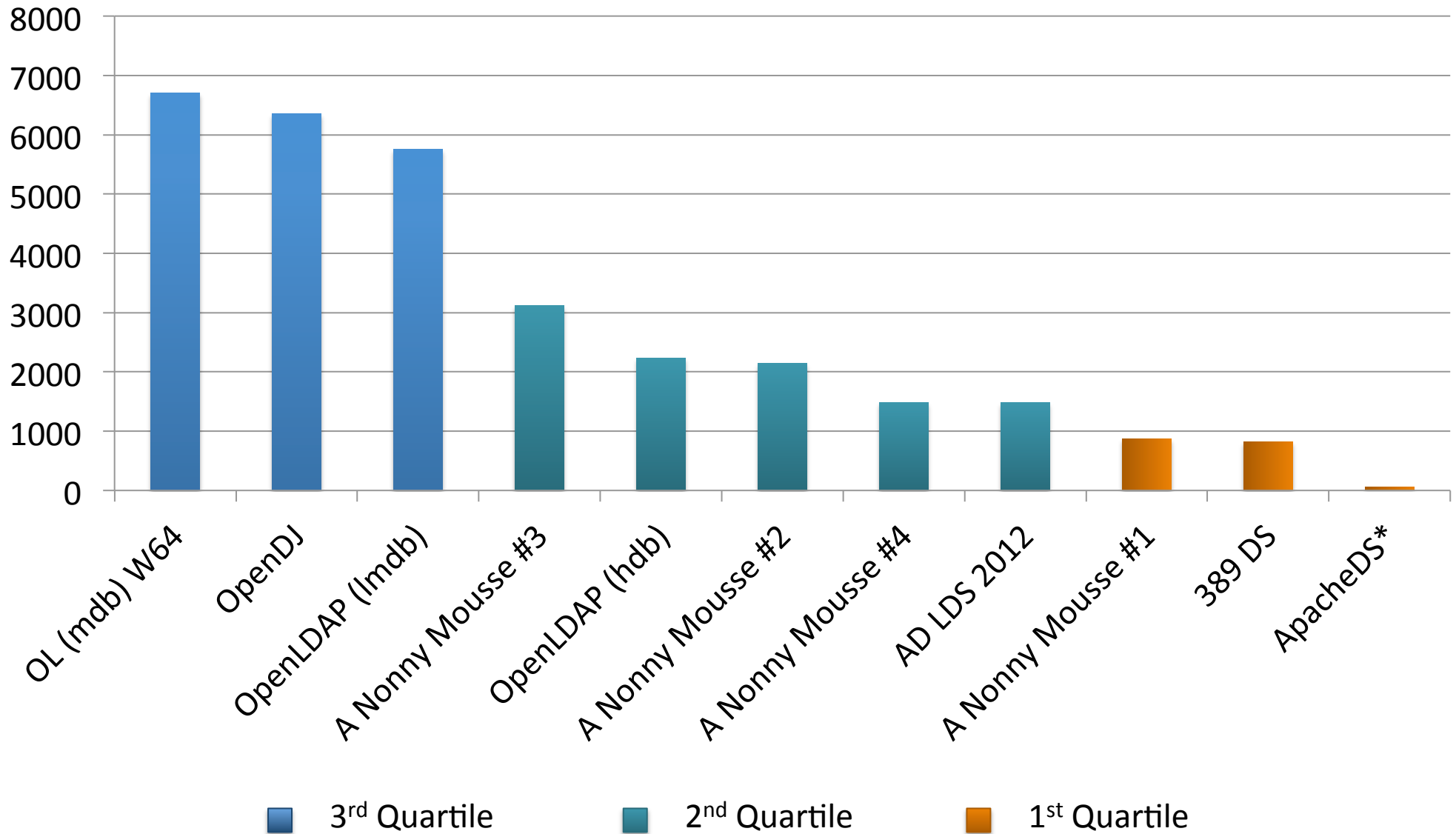
Read Results (Searches)



Write Results (Mods)

	Mods/sec	Std dev	Avg duration (ms)	Clients	Threads
OpenLDAP (mdb) 2.5	8851.53	48.463	4.504	8	5
OL (mdb) W64	6706.572	91.957	1.174	8	1
OpenDJ	6349.544	235.563	6.282	8	5
OpenLDAP (lmbd)	5760.039	186.988	1.372	8	1
A Nonny Mousse #3	3120.478	46.256	7.677	8	3
OpenLDAP (hdb)	2237.311	63.898	3.560	8	1
A Nonny Mousse #2	2151.025	70.316	14.861	8	4
A Nonny Mousse #4	1488.729	41.811	29.529	4	11
AD LDS 2012	1484.112	44.762	29.631	4	11
A Nonny Mousse #1	874.503	13.764	9.130	8	1
389 DS	823.187	20.037	97.166	8	10
ApacheDS*	54.527	0.847	293.402	4	4

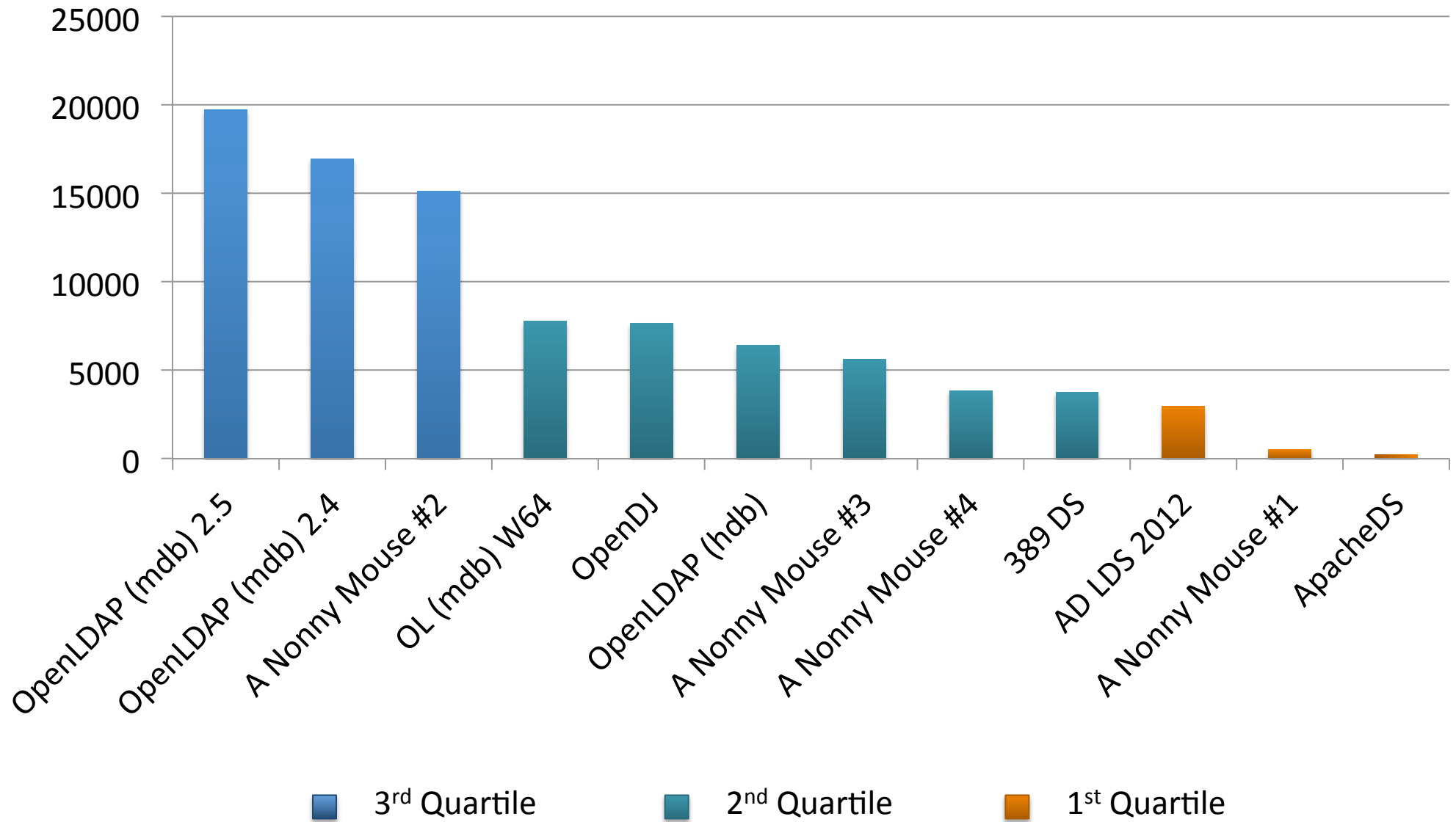
Write Results (Mods)



Authorization Results

	Auths/sec	Std dev	Avg duration (ms)	Clients	Threads
OpenLDAP (mdb) 2.5	19733.203	169.901	4.251	6	14
OpenLDAP (mdb) 2.4	16941.983	47.733	4.952	6	14
A Nonny Mousse #2	15137.869	113.337	2.107	8	4
OL (mdb) W64	7764.072	234.171	2.054	8	2
OpenDJ	7667.647	213.966	6.253	8	6
OpenLDAP (hdb)	6392.697	146.040	13.133	6	14
A Nonny Mousse #3	5631.878	76.011	7.096	8	5
A Nonny Mousse #4	3839.005	163.208	14.580	8	7
389 DS	3763.271	63.240	14.874	8	7
AD LDS 2012	2946.338	97.335	21.716	4	16
A Nonny Mousse #1	525.387	8.038	60.899	4	8
ApacheDS*	210.234	2.414	19.022	4	1

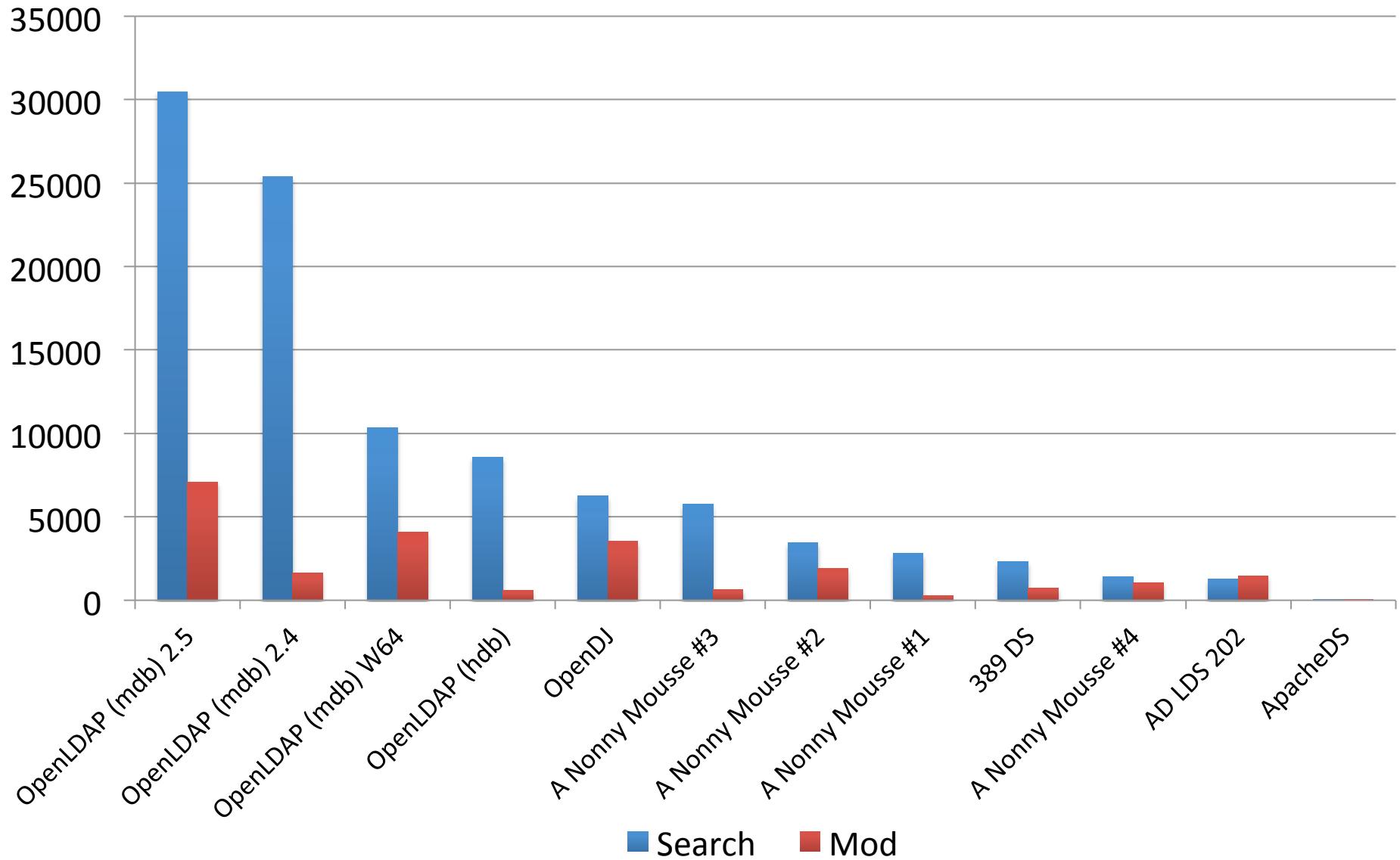
Authorization Results



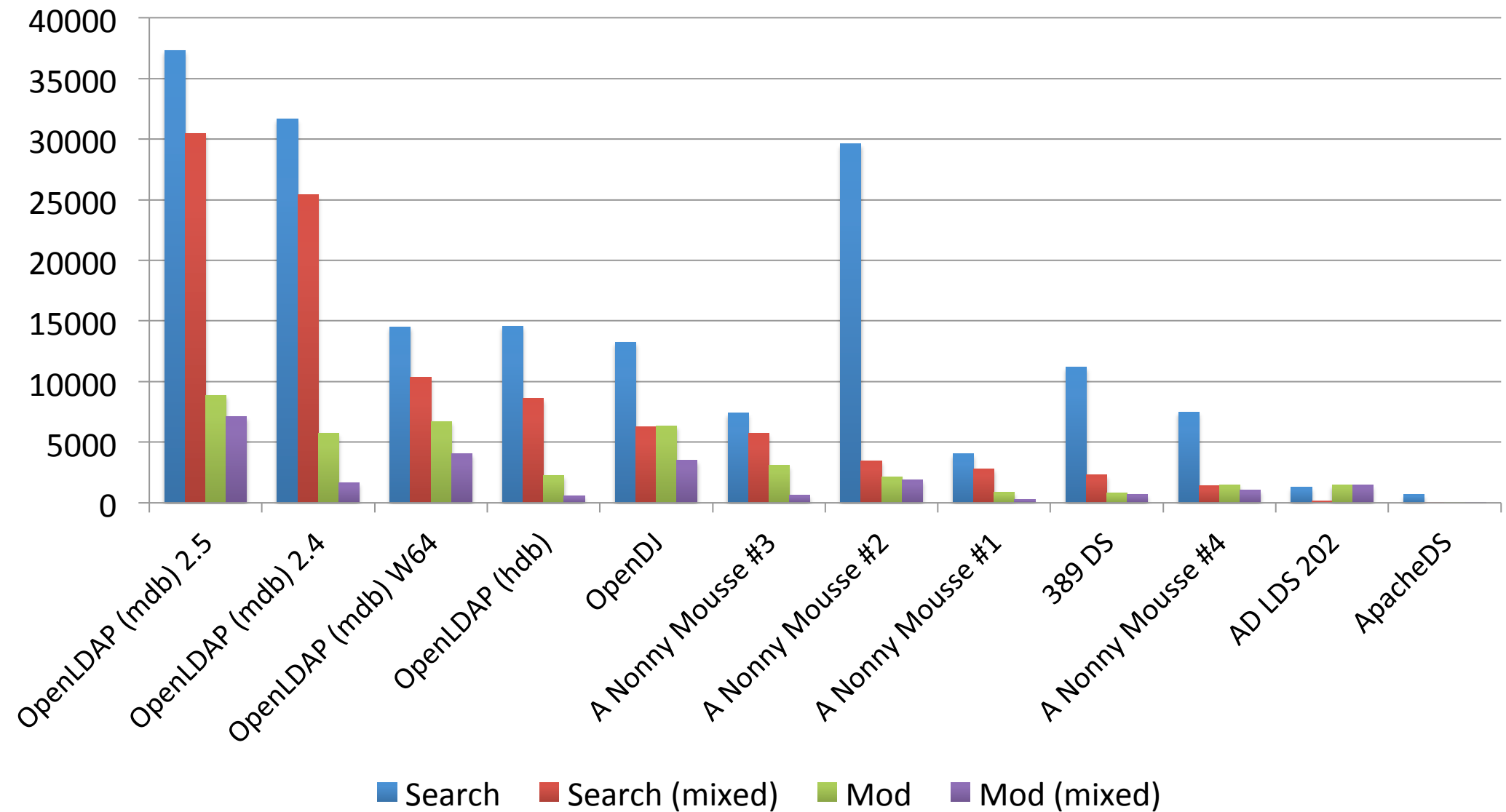
Mixed Search/Mod Results

	Searches/sec (normal)	Searches/ sec (mixed)	% Decrease (searches)	Mods/sec (normal)	Mods/sec (mixed)	% Decrease (mods)
OpenLDAP (lmdb) 2.5	37291.06	30479.99	18.264%	8851.53	7088.369	19.92%
OpenLDAP (lmdb) 2.4	31674.019	25399.992	19.808%	5760.039	1652.352	71.314%
OL (mdb) W64	14527.750	10329.298	28.900%	6706.572	4064.412	39.397%
OpenLDAP (hdb)	14567.242	8592.502	41.358%	2237.311	585.614	73.825%
OpenDJ	13248.902	6247.868	52.842%	6349.544	3524.595	44.491%
A Nonny Mousse #3	7396.535	5741.949	22.370%	3120.478	647.911	79.237%
A Nonny Mousse #2	29602.788	3459.205	88.315%	2151.025	1910.393	11.189%
A Nonny Mousse #1	4040.282	2822.542	30.140%	874.503	276.722	68.357%
389 DS	11181.735	2311.387	79.323%	823.187	718.902	12.668%
A Nonny Mousse #4	7484.557	1409.506	81.168%	1488.729	1069.746	28.144%
AD LDS 2012	1282.715	164.607	87.167%	1484.112	1459.191	1.645%
ApacheDS*	687.985	43.703	93.720%	54.527	43.675	19.902%

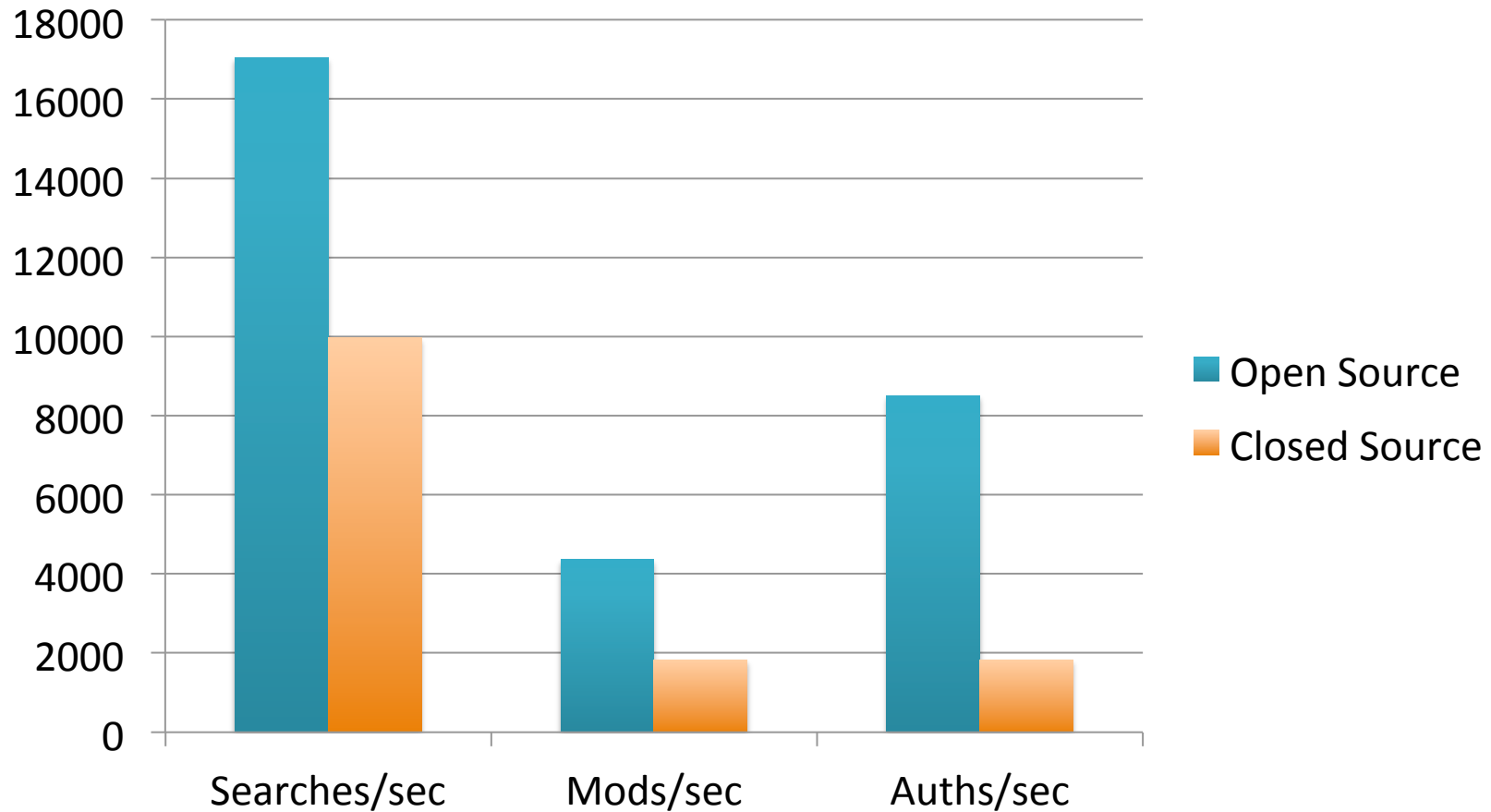
Mixed Search/Mod Results



Before & After: Mixed Comparison



Open vs. Closed Source Performance



A Word About SLAMD

- Distributed load generation engine
- Updates ceased in 2010
- Necessary to have some sort of product for performance analysis and testing

Thanks!

