

AZK File Sharing Benchmarks

January 22, 2015

This document have a comparison between some different approaches to share folders and files from host machine (Mac OS X) to containers inside guest machine (boot2docker).

1. Tests

The machine's specification used to execute those tests:

- Macbook Air 13" - Mid 2013
- Processor 1.3 GHz Intel Core i5
- Memory 4GB 1600 MHz DDR3
- 128GB flash storage

VirtualBox tests were executed using Vagrant for easy NFS configuration.

Both AZK (using boot2docker) and VirtualBox (using Ubuntu Trusty) was configured to use 1GB of RAM and 4 CPU cores.

The benchmark tool was IOZONE - <http://iozone.org/>

2. Approaches

Description of all approaches used:

1. **AZK + unfs3 + bindfs**: represents the current default approach used by AZK.
2. **AZK + Vbox**: represents the option “vbox: true” currently supported by AZK. It uses the default Shared Folder from VirtualBox.
3. **AZK + OSX NFS**: represents AZK modified to use the default NFS server from Mac OS X.
4. **Vbox + OSX NFS**: represents VirtualBox using the default NFS server from Mac OS x.
5. **AZK + OSX SMB**: represents AZK modified to use the default SAMBA server from Mac OS X.

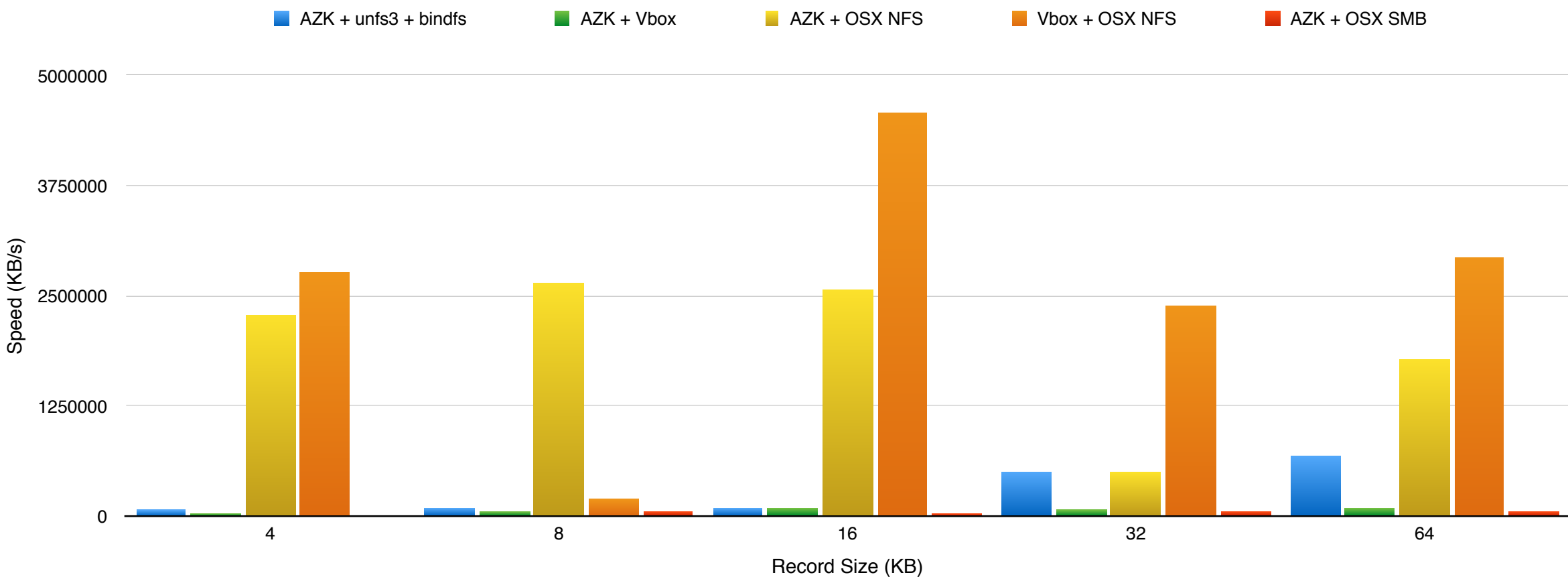
3. Results

The reports are Sequential Read, Random Read, Sequential Write and Random Write.

Sequential File READ

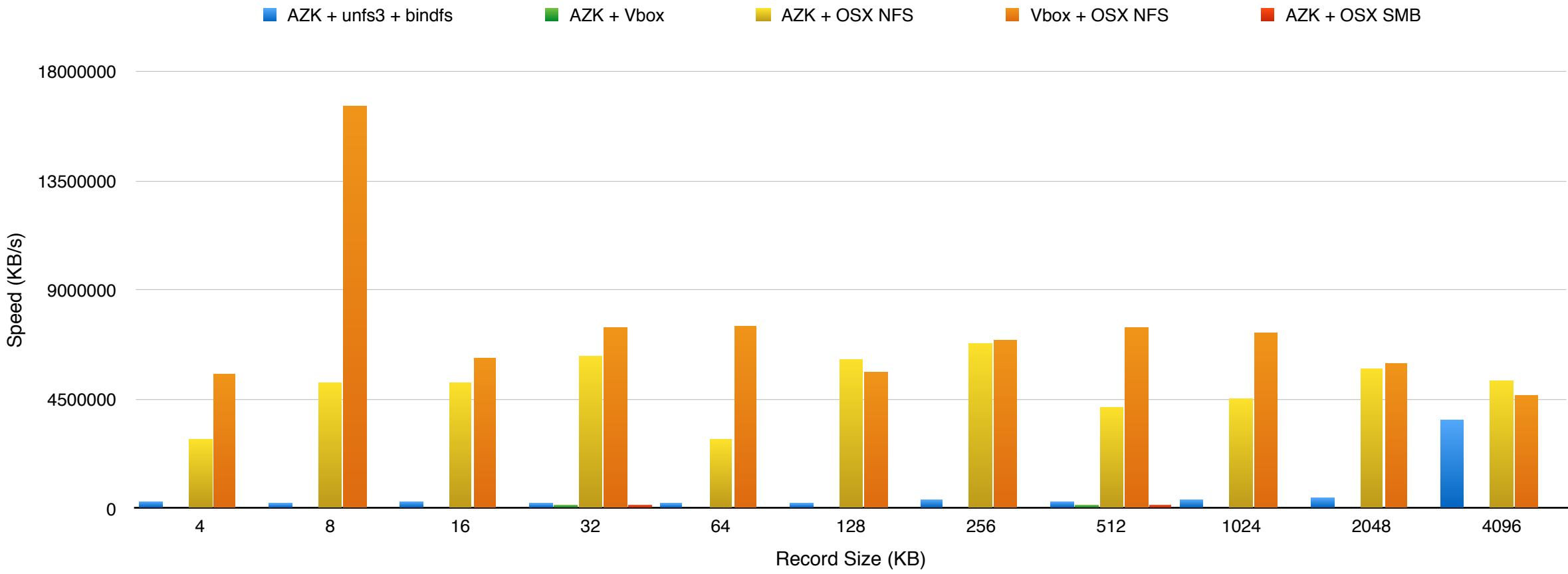
Small File Read - 64 KB

	4	8	16	32	64
AZK + unfs3 + bindfs	74594	84770	100476	500241	673426
AZK + Vbox	28983	50709	83660	80211	83426
AZK + OSX NFS	2282393	2641785	2566025	496540	1770549
Vbox + OSX NFS	2778507	187768	4579919	2383732	2930153
AZK + OSX SMB	16797	42611	37191	55454	48961



Medium File Read - 4 MB

	4	8	16	32	64	128	256	512	1024	2048	4096
AZK + unfs3 + bindfs	325335	236749	293619	246240	213121	223898	348471	281629	330829	459605	3618634
AZK + Vbox	14468	23938	53217	135566	57419	68944	56107	140669	43871	47979	51532
AZK + OSX NFS	2874035	5151985	5190902	6291583	2840769	6167360	6780783	4158152	4551427	5752294	5251194
Vbox + OSX NFS	5556930	16589107	6205229	7448098	7542932	5657579	6908948	7419150	7237860	5978494	4686767
AZK + OSX SMB	14894	65617	50043	128020	50445	54016	36205	112148	48060	41248	64504



Large File Read - 512 MB

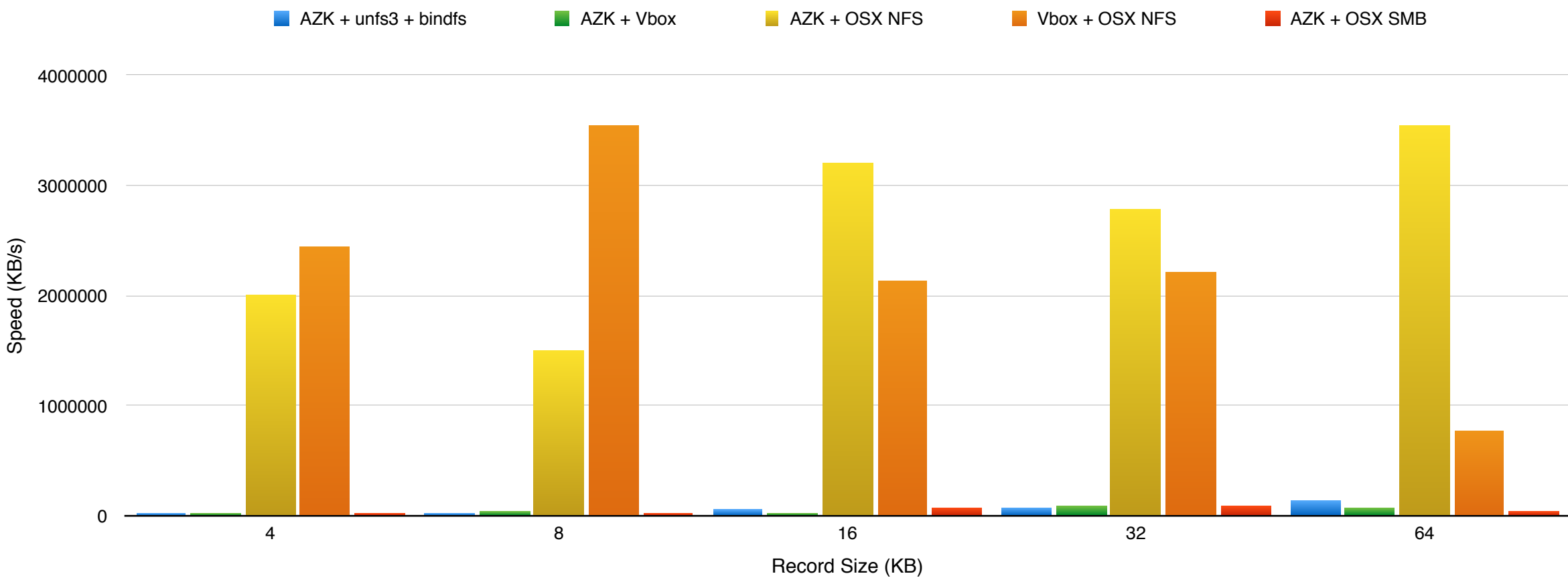
	64	128	256	512	1024	2048	4096	8192	16384
AZK + unfs3 + bindfs	14552	14195	14537	14023	13648	15094	14630	14656	15749
AZK + Vbox	96308	69672	99717	109881	125832	103147	91362	120533	93859
AZK + OSX NFS	6091416	15524	5846341	6156217	6140197	4900061	4316121	2782448	4235369
Vbox + OSX NFS	25982	25726	25884	25144	26490	25707	26153	26314	27356
AZK + OSX SMB	91390	105478	98069	112259	77664	101381	97713	96044	91914



Random File READ

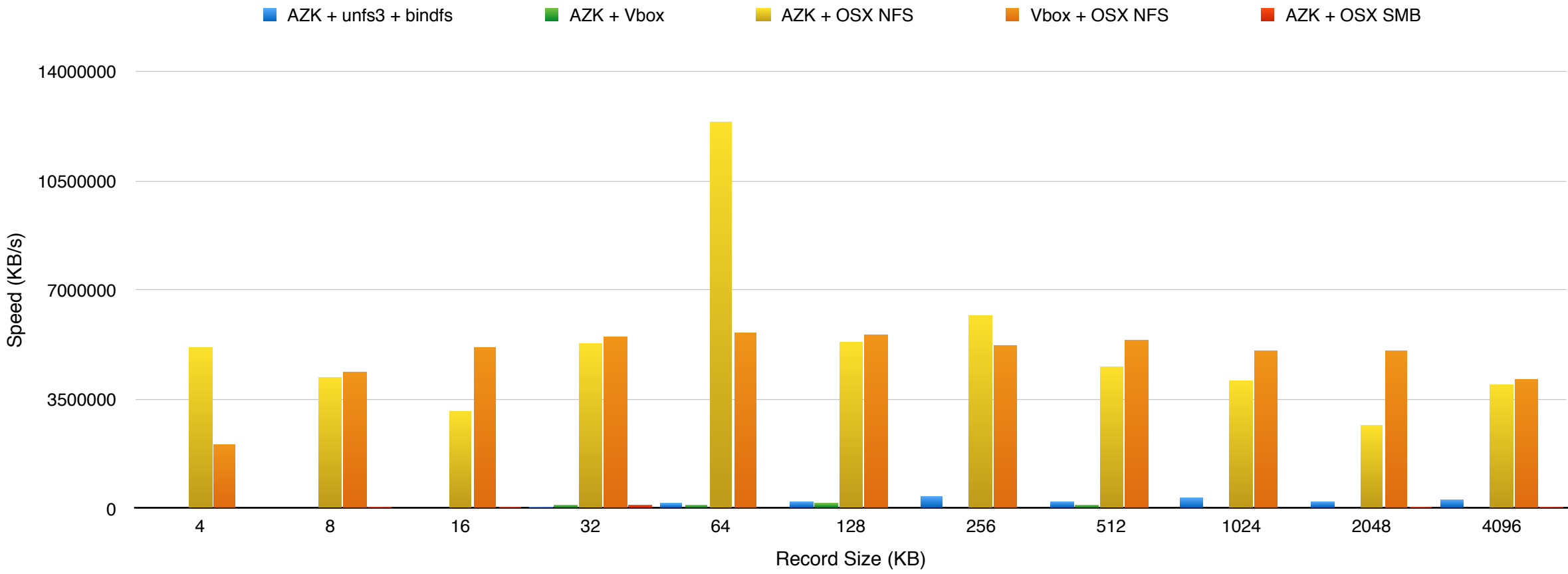
Small File Read - 64 KB

	4	8	16	32	64
AZK + unfs3 + bindfs	19230	22583	56233	76836	137053
AZK + Vbox	22478	48084	17674	82885	73390
AZK + OSX NFS	2009076	1494534	3210512	2778507	3550198
Vbox + OSX NFS	2448974	3550198	2137031	2207321	770013
AZK + OSX SMB	22023	29933	65718	81304	45515



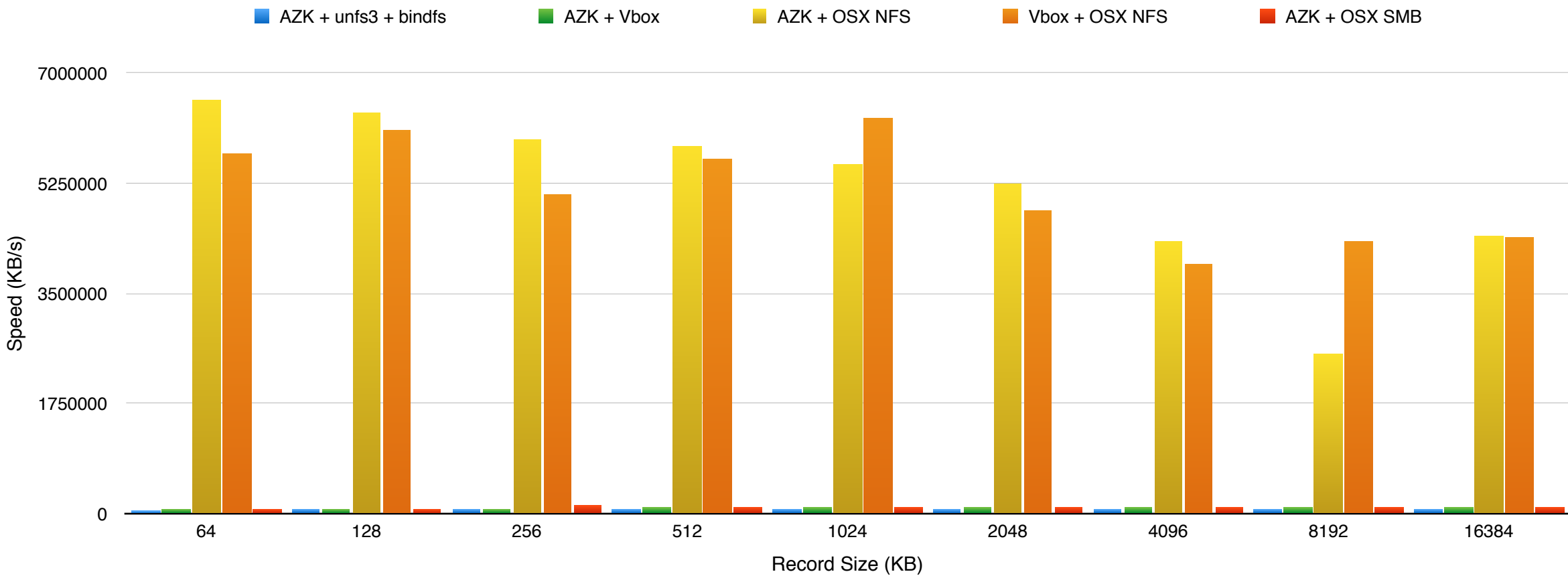
Medium File Read - 4 MB

	4	8	16	32	64	128	256	512	1024	2048	4096
AZK + unfs3 + bindfs	12518	23207	53979	84375	158604	243318	416182	222043	352895	241709	272555
AZK + Vbox	9823	18390	45573	136706	132535	149080	42704	127756	44383	36656	54881
AZK + OSX NFS	5139654	4187544	3138671	5299792	12371977	5354300	6176229	4541801	4108432	2649329	3965245
Vbox + OSX NFS	2041913	4395389	5145812	5482450	5633461	5589473	5203480	5381133	5026864	5050509	4120256
AZK + OSX SMB	29944	61071	58247	107962	46337	54155	54102	55771	45306	57992	59906



Large File Read - 512 MB

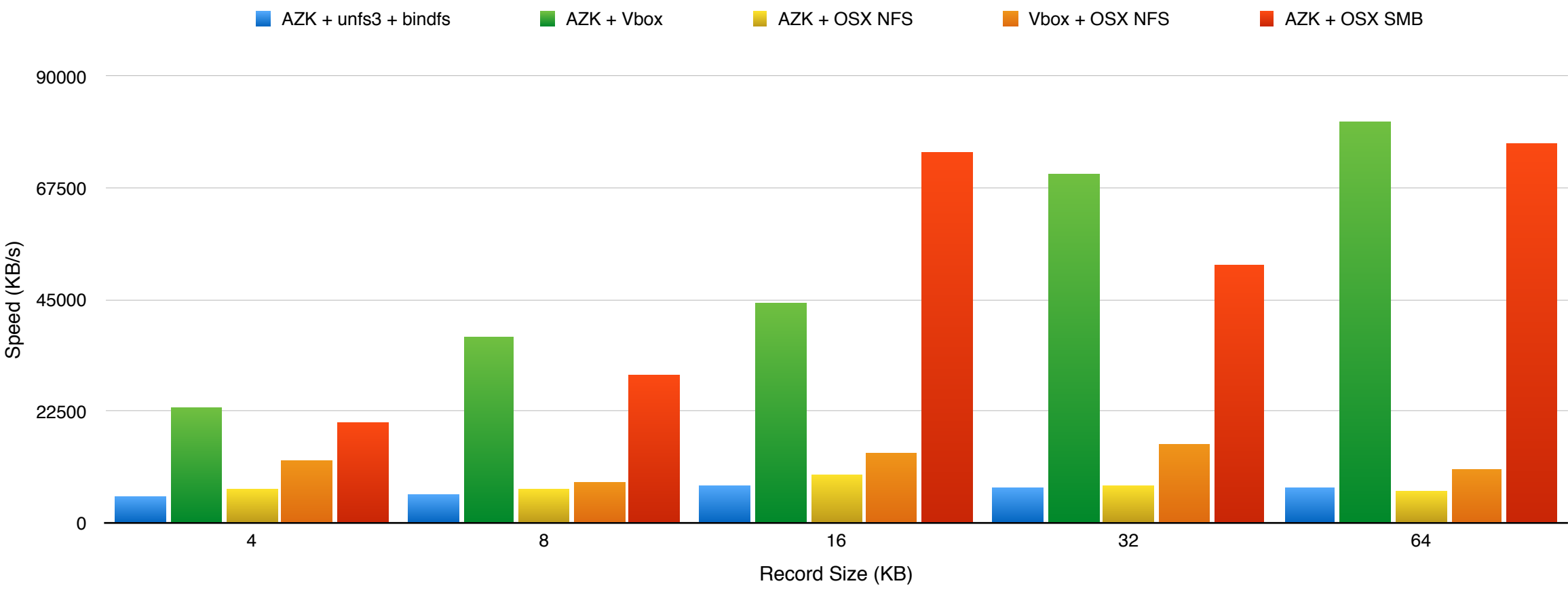
	64	128	256	512	1024	2048	4096	8192	16384
AZK + unfs3 + bindfs	51414	82908	62544	63063	68374	67600	66393	75309	76281
AZK + Vbox	76737	83219	63046	106576	86439	105055	111179	101815	107399
AZK + OSX NFS	6572673	6373470	5935628	5836318	5548246	5238106	4342654	2541595	4426877
Vbox + OSX NFS	5716728	6084489	5078932	5638179	6280472	4812144	3948724	4325630	4373766
AZK + OSX SMB	80382	83147	116507	112501	92843	108305	108428	90869	98897



Sequential File WRITE

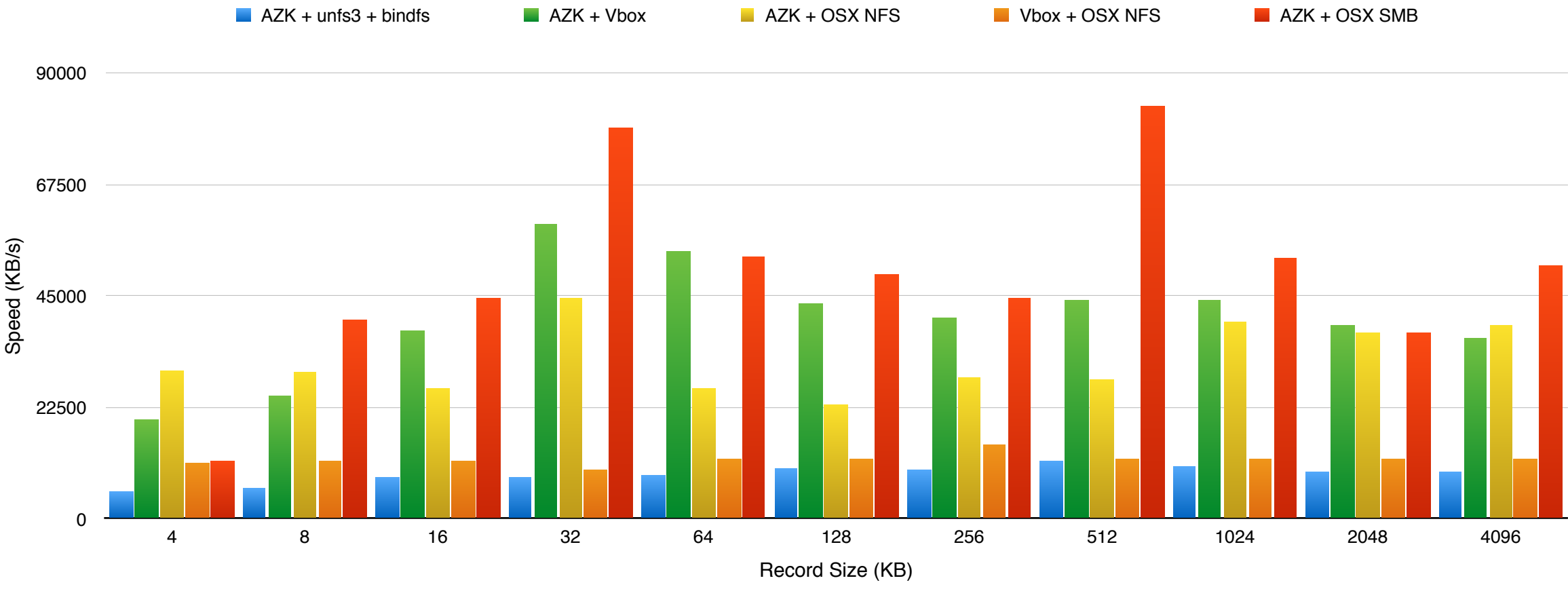
Small File Write - 64 KB

	4	8	16	32	64
AZK + unfs3 + bindfs	5304	5691	7613	7286	7278
AZK + Vbox	23046	37383	44291	70167	80790
AZK + OSX NFS	6714	6647	9589	7561	6266
Vbox + OSX NFS	12526	8288	13907	15888	10930
AZK + OSX SMB	20082	29890	74677	52198	76638



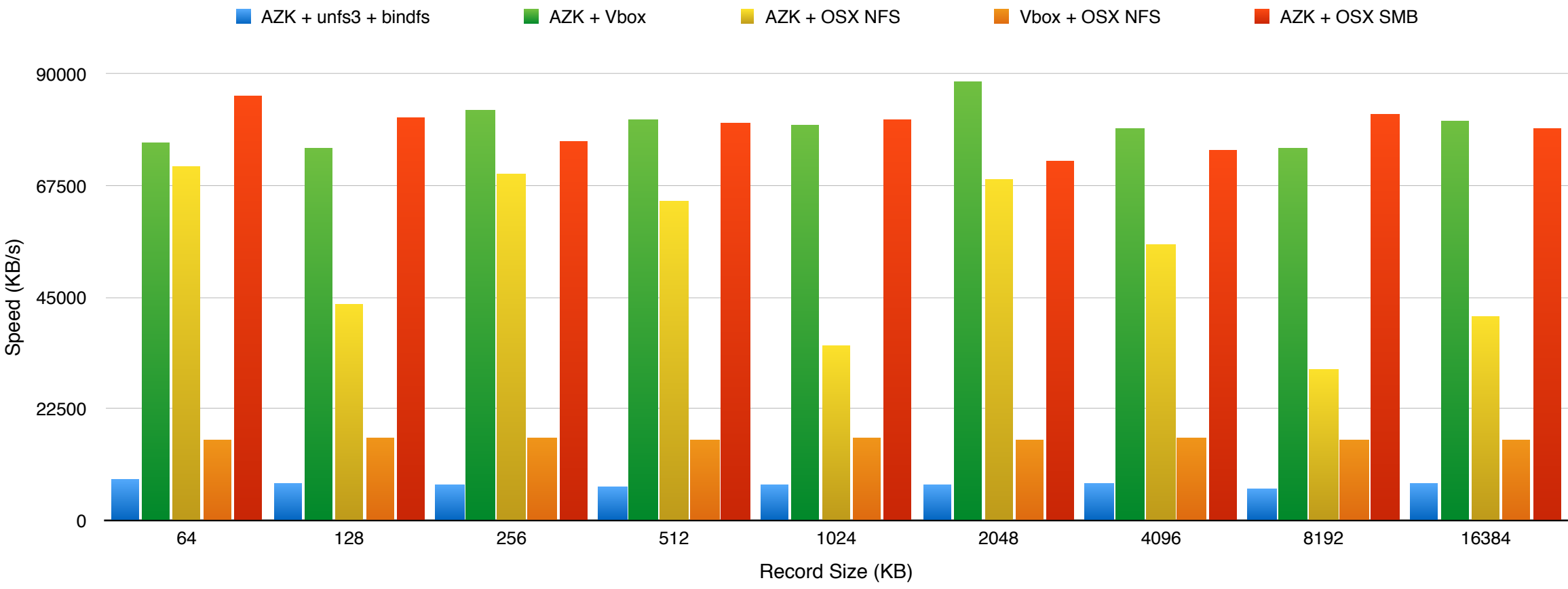
Medium File Write - 4 MB

	4	8	16	32	64	128	256	512	1024	2048	4096
AZK + unfs3 + bindfs	5377	6307	8453	8557	8589	10222	9848	11648	10406	9642	9624
AZK + Vbox	20063	24728	37922	59632	53909	43499	40343	44042	44313	38882	36332
AZK + OSX NFS	29926	29640	26292	44664	26111	23172	28486	28282	39800	37758	38983
Vbox + OSX NFS	11427	11696	11628	9809	11896	11970	14819	12138	11935	12037	12045
AZK + OSX SMB	11589	40092	44703	78813	52912	49464	44665	83164	52631	37682	51089



Large File Write - 512 MB

	64	128	256	512	1024	2048	4096	8192	16384
AZK + unfs3 + bindfs	8032	7444	7112	6921	7242	7208	7317	6540	7657
AZK + Vbox	76043	75043	82617	80757	79929	88389	79047	75138	80351
AZK + OSX NFS	71512	43627	69870	64393	35362	68991	55613	30539	40986
Vbox + OSX NFS	16339	16473	16456	16388	16456	16322	16439	16158	16426
AZK + OSX SMB	85718	81413	76658	80105	80699	72386	74762	82032	78862



Random File WRITE

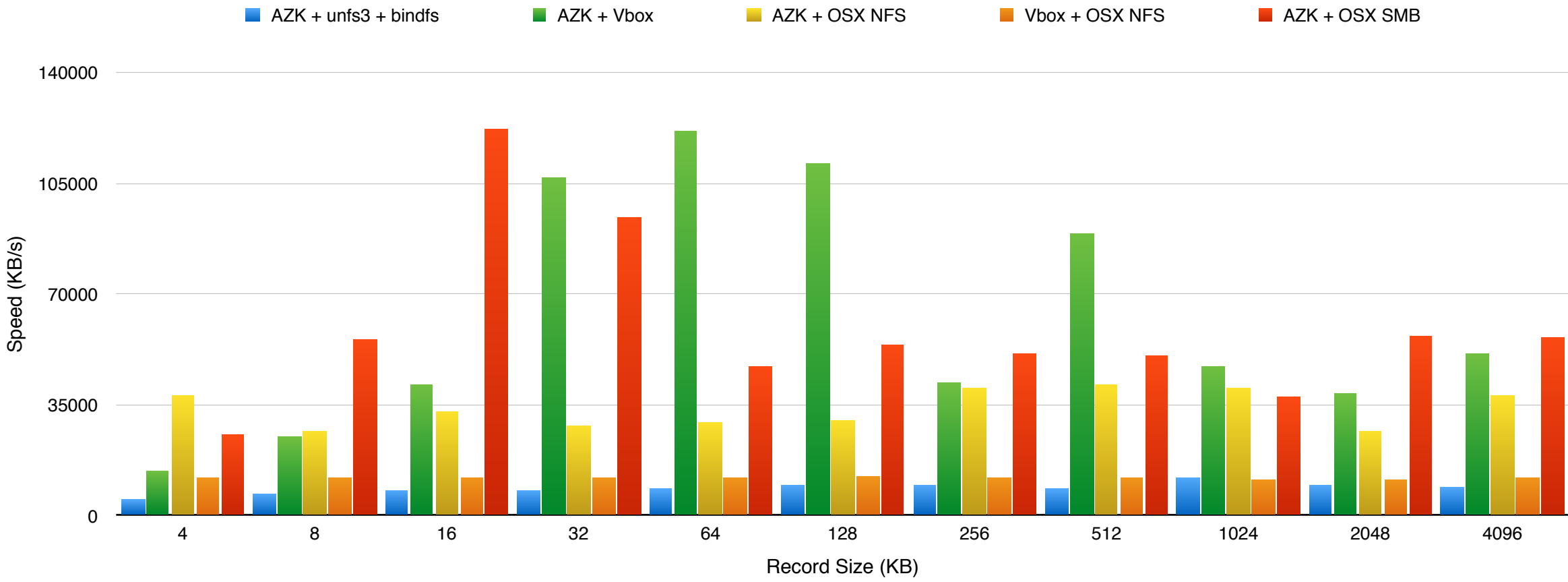
Small File Write - 64 KB

	4	8	16	32	64
AZK + unfs3 + bindfs	7348	6613	7260	7971	8554
AZK + Vbox	29357	61658	76748	61194	91847
AZK + OSX NFS	4183	6390	7544	8331	9241
Vbox + OSX NFS	12374	14093	13448	11563	12553
AZK + OSX SMB	19758	30061	39559	62636	68748



Medium File Write - 4 MB

	4	8	16	32	64	128	256	512	1024	2048	4096
AZK + unfs3 + bindfs	5065	6749	8014	8094	8666	9753	9798	8231	11896	9778	9236
AZK + Vbox	14295	25003	41630	106811	121738	111359	42155	89358	47152	38601	50995
AZK + OSX NFS	38155	26745	33166	28672	29450	30258	40485	41658	40480	26945	38114
Vbox + OSX NFS	11823	12190	11909	11994	11759	12397	11714	11672	11489	11519	11727
AZK + OSX SMB	25757	55639	122086	94119	47324	53979	51379	50474	37322	56550	55972



Large File Write - 512 MB

	64	128	256	512	1024	2048	4096	8192	16384
AZK + unfs3 + bindfs	8123	7251	7013	6811	7124	6868	6659	6656	7236
AZK + Vbox	78573	69264	86905	93513	70253	95981	95255	92503	82579
AZK + OSX NFS	69645	47296	67201	58525	55949	57895	29993	38913	36026
Vbox + OSX NFS	16833	16881	16884	17109	16944	17050	17072	17530	17188
AZK + OSX SMB	83284	76482	93497	91102	80116	75100	81225	83583	82696

