

# Linux Software-RAID Chunk-Size and Filesystem comparison

Test-host: Debian GNU/Linux Lenny (testing), Kernel 2.6.23, 2x 1024MB DDR2-667 (Dual Channel, 2 Modules), Intel Core2Quad 2400MHz

All tests were performed on additional disks in the system. There was neither interference with the hosts boot disk nor was there any load

benchmarking software: *bonnie++ v1.3b with 4GB testing filesize* (twice the size of installed RAM)

<b>XFS **</b>	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096	per chr	block	rewrite	per chr	block	
<b>** Single Disk</b>	63876	69641	29793	66109	67528	207

<b>JFS **</b>	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096	per chr	block	rewrite	per chr	block	
<b>** Single Disk</b>	65327	69957	31033	66417	66943	226

<b>ext3 **</b>	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096	per chr	block	rewrite	per chr	block	
<b>** Single Disk</b>	63731	69029	29964	65315	67376	208

<b>XFS</b>	chunk-size (k)	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096		per chr	block	rewrite	per chr	block	
<b>Raid-10 (1+0)</b>	65536	75793	134870	58849	57622	127885	611
4x 250G 7200/16M SATAII Array: 500G	32768	80016	135090	63260	72396	92019	609
	16384	80294	134684	67681	71284	103246	619
	8192	80296	135152	69156	78833	105671	621
	4096	80084	134832	63024	78910	101979	624
	2048	80211	134997	63132	78977	102481	589
	1024	80003	134776	63526	81217	112771	596
	512	80414	136725	58843	81354	150715	605
	256	80301	136178	56371	79978	141740	586
	128	80359	135342	53048	65043	125840	609
	64	80114	134353	48590	62173	119148	592
	32	76727	135129	43503	52494	116636	576
	16	80221	136773	44286	50814	103742	547
	8	79794	135157	45588	50551	109794	468
	4	75233	135098	45929	53873	121191	407

<b>XFS</b>	chunk-size (k)	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096		per chr	block	rewrite	per chr	block	
<b>Raid-5</b>	65536	54072	41596	28330	59896	122588	532
4x 250G 7200/16M SATAII Array: 750G	32768	51676	40706	30537	74060	158617	540
	16384	49769	41139	29945	77424	151818	527
	8192	63372	57877	32675	71264	154438	551
	4096	68504	63430	36831	79313	163165	541
	2048	65056	61621	38038	80596	163822	544
	1024	63518	56734	40038	80420	160181	457
	512	74431	70429	46794	80869	174527	510
	256	70271	85415	52819	81432	195153	459
	128	78782	95200	53409	81055	191510	458
	64	79360	101371	50870	69259	169081	469
	32	79066	108820	47359	61940	155525	482
	16	79375	112070	45983	57196	141303	513
	8	78827	120677	43953	50383	122976	456
	4	78460	147143	60758	66360	150586	333
8x500G Areca-1220 s/w 4x5G while mounted at / (system running)	128	74217	227698	108665	81346	331453	278
	?	77429	87872	38856	66309	115664	369

<b>XFS</b>	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096	per chr	block	rewrite	per chr	block	
<b>Raid-1</b>	66392	66203	33270	72401	73446	446

<b>XFS</b>	chunk-size (k)	sequential output (write)			sequential input (read)		random seeks/s
blocksize: 4096		per chr	block	rewrite	per chr	block	
<b>Raid-0</b>	512	80345	269073	102002	82574	246271	512
4x 250G 7200/16M SATAII Array: 1000G	256	80294	269525	109841	82443	259152	542
	128	80364	266968	112869	81695	259952	534
	64	80326	270641	109625	81187	260077	524
	4	49050	272239	99070	70475	231504	351



<b>JFS</b>	chunk-size (k)	sequential output (write)			sequential input (read)		random seeks/s
		per chr	block	rewrite	per chr	block	
blocksize: 4096							

<b>Raid-5</b>	512	60501	74286	48954	81377	154478	458
4x 250G	256	76239	88611	48565	79721	193889	460
7200/16M	128	76795	97819	50157	80138	190598	480
SATAII	64	76699	102964	48321	72573	177208	449
Array: 750G	4	75208	118578	57294	66629	151168	311

<b>Raid-10 (1+0)</b>	512	79775	137583	61437	81719	147460	589
4x 250G	256	79826	138374	58530	73280	141027	596
7200/16M	128	79653	134771	53303	69287	121855	572
SATAII	64	79467	137480	48743	64148	119566	578
Array: 500G	4	76334	134513	49073	48359	119364	363

<b>Raid-1</b>	%	61356	67143	32261	72758	79191	447
2x 250G / 7200/16M / SATA II / Array: 250G							

<b>Raid-0</b>	512	80316	255517	98238	82932	247115	514
4x 250G	256	75359	265148	112471	82778	258837	508
7200/16M	128	79760	259005	115677	81453	257825	504
SATAII	64	79823	258188	115413	80871	253527	504
Array: 1000G	4	78707	240389	108948	70828	227886	330

<b>ext3</b>	chunk-size (k)	sequential output (write)			sequential input (read)		random seeks/s
		per chr	block	rewrite	per chr	block	
blocksize: 4096							

<b>Raid-5</b>	512	56240	75490	50991	72105	176466	426
4x 250G	256	71115	82350	51188	74153	191161	408
7200/16M	128	72032	86729	51268	73482	187239	417
SATAII	64	71832	90974	51355	70686	175709	403
Array: 750G	4	71124	111284	56762	65307	146736	287

<b>Raid-10 (1+0)</b>	512	70537	131628	61561	77823	133129	505
4x 250G	256	70648	132026	59897	77798	136514	514
7200/16M	128	69670	130426	54464	64326	121664	488
SATAII	64	71214	130737	53414	62149	121659	491
Array: 500G	4	70917	129867	51273	56033	115163	342

<b>Raid-1</b>	%	62218	62704	35198	68143	73588	351
2x 250G / 7200/16M / SATA II / Array: 250G							

<b>Raid-0</b>	512	67009	251471	105271	79155	244274	456
4x 250G	256	72803	261519	109860	80192	255679	488
7200/16M	128	73300	253920	113457	79917	253284	442
SATAII	64	72778	255535	112396	78947	254406	481
Array: 1000G	4	72460	258207	106223	63826	228985	324