

Pro/ENGINEER Wildfire for Linux - benchmark

Sorry for my English.

Linux is free, fast, stable, flexibilty, etc..., these arguments are know through all. Is Linux good platform for Pro/ENGINEER Wildfire? Yes or no, if 'yes' then which distributions are better. I'll try to answer.

1. Hardware

For all tests I used the same computer. At the moment it's very average hardware. Configuration is below.

<i>HARDWARE</i>	
Mainboard	Epox 8KHA+, VIA KT266A (VT8366/A + VT8233)
Processor	Athlon XP+ 1700, 1470 MHz
RAM	DDR PC 2100, 512 MB=2x256 MB
Hard disk	IBM, 7200 rpm, 40 GB, ATA 100
Graphic card	PixelView, GeForce 2Ti, 64 MB
Other components	Unimportant for this benchmark

2. Software and preferences

All tests based on Olaf's Cortens benchmark called OCUS Pro/E Benchmark v3.2. Olaf sent me new and correctly (old version has got a few mistakes, see also: <http://www.proosite.com/BENCH30/ptcremarks.htm>) version of trail for Pro/ENGINEER Wildfire. In principle I didn't compare the Pro/ENGINEER productivity, but I compared the operating systems productivity. I focused on productivity of operating system, Pro/ENGINEER was just a tool. Because each distributions included difference version of kernel and KDE, I recompiled kernel and KDE with source. In Slackware, Mandrake and Red Hat 8.0 I switched optimization for Athlon XP (gcc 3.x, -march=athlon-xp -mcpu=athlon-xp), in Debian and Red Hat 7.3 I switched optimization for i686 (gcc 2.9x, -march=i686 -O2 -mcpu=i686).

SOFTWARE							
	Debian 3.0 Woody	Mandrake 9.0 Dolphin	Red Hat 7.3 Valhalla	Red Hat 8.0 Psyche	Slackware 9.0	Windows 2000 SP2	Windows XP Pro
Pro/ENGINEER	Wildfire 2003170						
Benchmark	OCUS Pro/E Benchmark v3.2						
Kernel	2.4.20 compile with source (without any patches)*					compile with source of course ;-)	
Graphic driver	NVIDIA version 4363					Detonator version 41.09	
XFree version	4.1.0	4.2.1	4.2.0	4.2.0	4.3.0	N/a	N/a
GUI	KDE 3.1.2 compile with source (gcc version 2.95.4) WindowMaker 0.80.2	KDE 3.1.2 compile with source (gcc version 3.2) WindowMaker 0.80.1	KDE 3.1.2 compile with source (gcc version 2.96) WindowMaker 0.80.1	KDE 3.1.2 compile with source (gcc version 3.2) WindowMaker 0.80.2	KDE 3.1.2 compile with source (gcc version 3.2.2) WindowMaker 0.80.2	N/a	N/a
PREFERENCES							
File system	Ext2	Ext2	Ext2	Ext2	ReiserFS	NTFS	NTFS
Swap partition	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB**	512 MB**
EXTRA TEST							
hdparm -T /dev/hda	272.34 MB/s	272.34 MB/s	266.67 MB/s	266.67 MB/s	272.34 MB/s	N/a	N/a
hdparm -t /dev/hda	45.71 MB/s	45.71 MB/s	45.07 MB/s	45.39 MB/s	45.71 MB/s	N/a	N/a

*except the 'file systems' all options were the same (the same .config file)

**size of the swap file

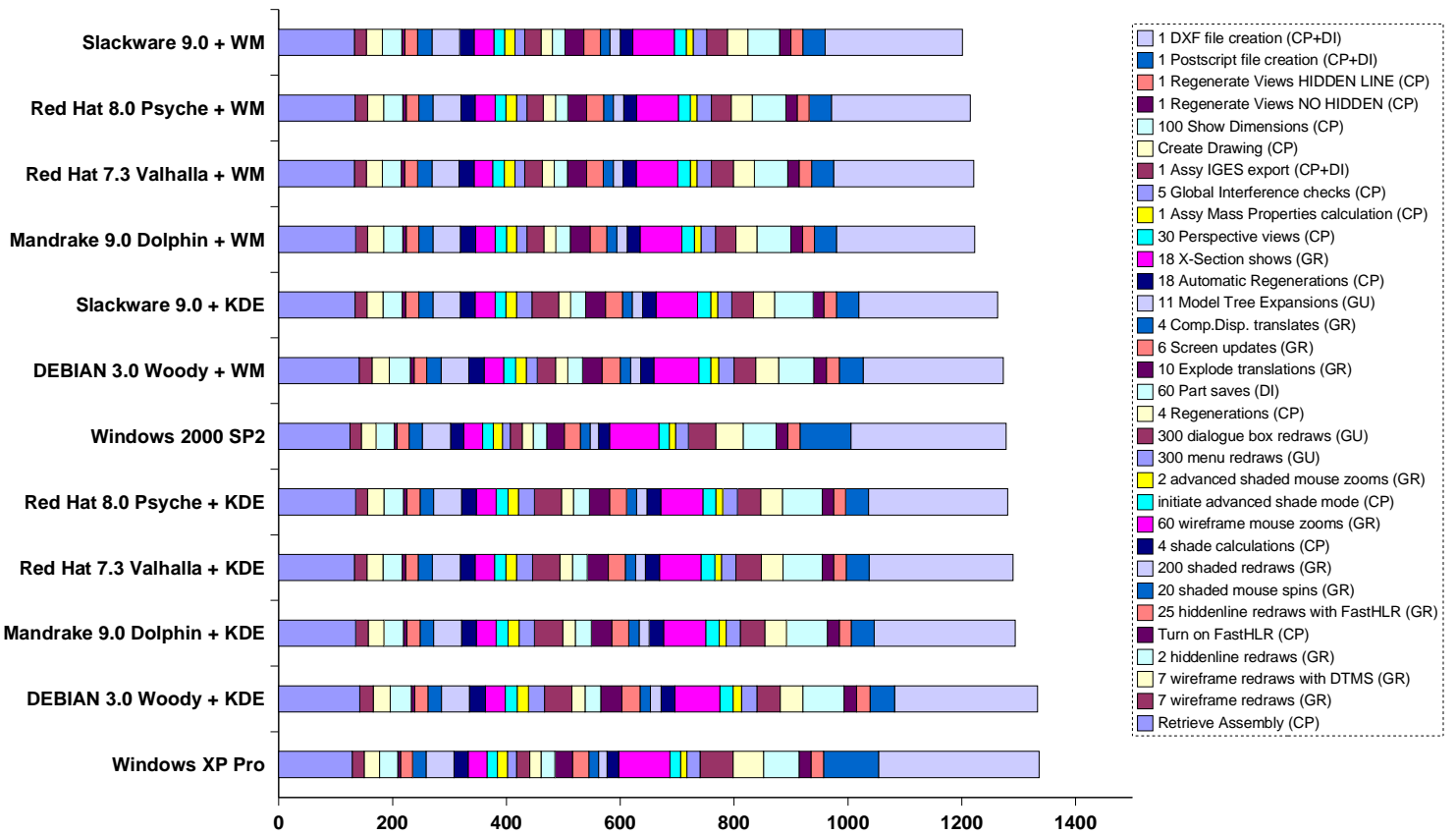
3. Results

I rebooted my machine before each test and repeated each test 3 time. I approved the middle result.

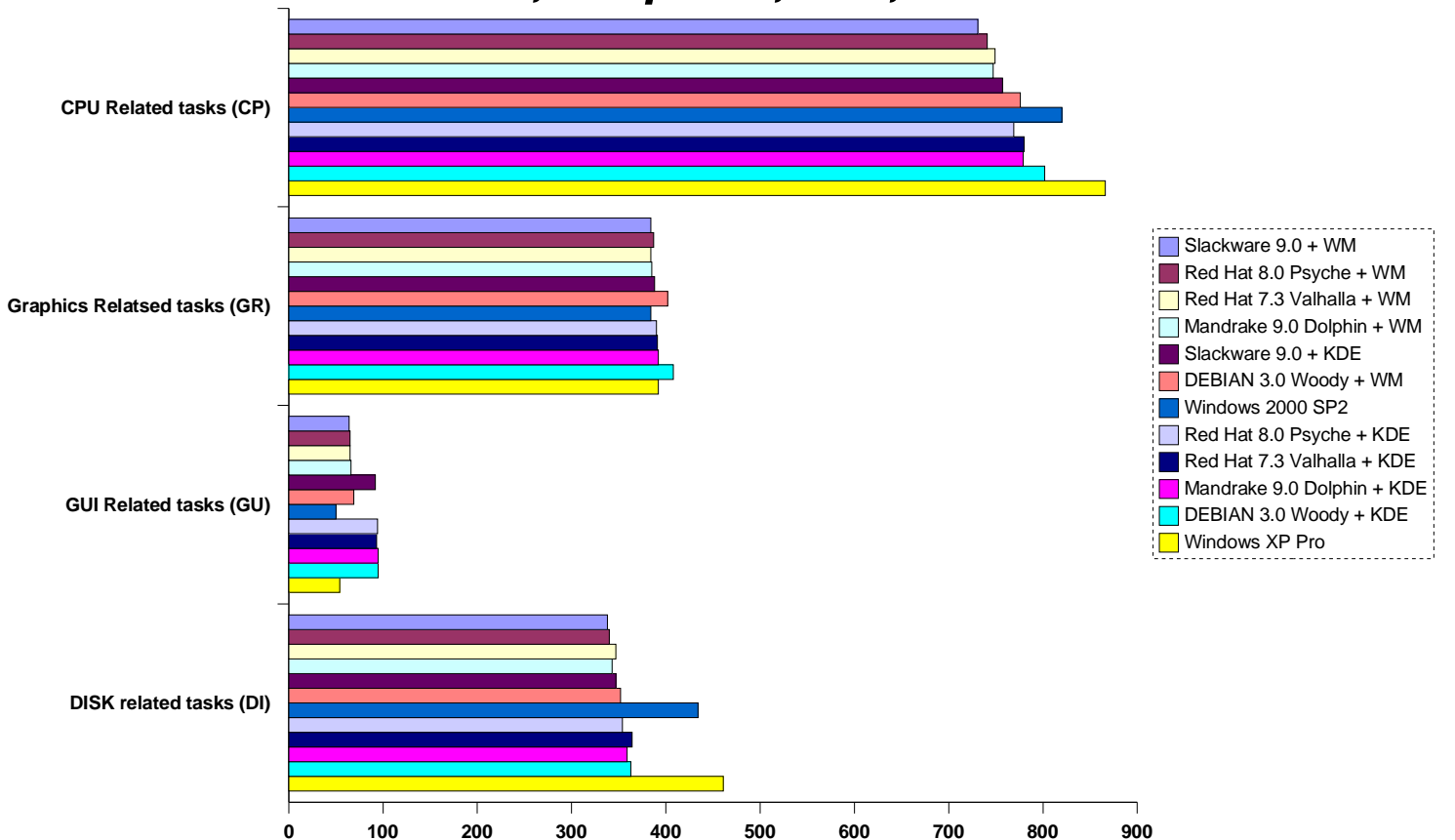
	DEBIAN 3.0 Woody + KDE	DEBIAN 3.0 Woody + WM	Mandrake 9.0 Dolphin + KDE	Mandrake 9.0 Dolphin + WM	Red Hat 7.3 Valhalla + KDE	Red Hat 7.3 Valhalla + WM	Red Hat 8.0 Psyche + KDE	Red Hat 8.0 Psyche + WM	Slackware 9.0 + KDE	Slackware 9.0 + WM	Windows 2000 SP2	Windows XP Pro
Retrieve Assembly (CP)	142	141	135	135	133	133	135	134	134	133	125	129
7 wireframe redraws (GR)	24	23	22	21	22	21	21	22	21	21	20	21
7 wireframe redraws with DTMS (GR)	30	30	28	28	28	28	29	28	28	28	26	27
2 hiddenline redraws (GR)	37	37	34	34	34	33	34	34	34	34	32	32
Turn on FastHLR (CP)	6	7	6	6	6	6	6	6	6	6	5	5
25 hiddenline redraws with FastHLR (GR)	23	22	23	22	22	23	23	22	23	22	21	21
20 shaded mouse spins (GR)	24	25	24	25	25	25	24	25	25	25	23	24
200 shaded redraws (GR)	49	49	49	48	49	48	49	49	48	49	50	49
4 shade calculations (CP)	28	27	26	27	26	26	26	25	26	25	23	25
60 wireframe mouse zooms (GR)	35	34	35	34	34	33	35	35	35	35	33	33
initiate advanced shade mode (CP)	21	21	21	20	20	20	21	19	19	19	19	18
2 advanced shaded mouse zooms (GR)	20	19	19	18	19	19	18	19	19	18	16	18
300 menu redraws (GU)	28	19	27	18	28	17	28	18	27	17	14	16
300 dialogue box redraws (GU)	48	32	50	30	48	31	48	29	47	29	21	23
4 Regenerations (CP)	23	22	22	21	22	21	21	21	21	20	19	20
60 Part saves (DI)	28	26	28	25	26	23	28	22	26	22	24	24
10 Explode translations (GR)	37	34	36	35	37	34	35	33	35	33	31	31
6 Screen updates (GR)	32	32	30	29	30	29	30	30	30	29	28	29
4 Comp.Disp. translates (GR)	18	18	18	18	18	18	18	17	17	17	17	17
11 Model Tree Expansions (GU)	19	18	18	18	17	17	18	18	18	18	15	15
18 Automatic Regenerations (CP)	24	23	25	23	25	23	24	23	24	22	19	20
18 X-Section shows (GR)	79	79	74	73	73	73	74	73	73	73	87	90
30 Perspective views (CP)	23	21	24	22	24	22	23	21	23	21	18	19
1 Assy Mass Properties calculation (CP)	15	14	12	12	12	12	12	12	12	12	11	11
5 Global Interference checks (CP)	27	27	25	25	25	25	26	25	25	24	23	23
1 Assy IGES export (CP+DI)	41	38	43	36	45	39	41	35	38	36	48	58
Create Drawing (CP)	40	40	38	37	38	37	38	37	37	36	48	54
100 Show Dimensions (CP)	72	62	72	60	69	58	70	59	68	56	58	62
1 Regenerate Views NO HIDDEN (CP)	22	22	21	20	20	20	20	20	19	20	20	21
1 Regenerate Views HIDDEN LINE (CP)	24	23	21	21	22	22	21	21	22	21	22	22
1 Postscript file creation (CP+DI)	43	42	40	39	40	39	40	39	39	39	89	97
1 DXF file creation (CP+DI)	251	246	248	243	253	246	245	244	244	241	273	282
CPU Related tasks (CP)	802	776	779	747	780	749	769	741	757	731	820	866
Graphics Related tasks (GR)	408	402	392	385	391	384	390	387	388	384	384	392
GUI Related tasks (GU)	95	69	95	66	93	65	94	65	92	64	50	54
DISK related tasks (DI)	363	352	359	343	364	347	354	340	347	338	434	461
TOTAL	1333	1273	1294	1223	1290	1221	1281	1215	1263	1201	1278	1336

4. Charts

All results



CPU, Graphics, GUI, Disk



5. Conclusion

The charts speak for itself.

- In my opinion very important is version of gcc: gcc 3.x gives faster code than gcc 2.x (very good results of Slackware but average results of Debian).
- When I was analyzing the results I noticed that Slackware was the best in disk operations, only Slackware had reiser FS filesystem. I made extra test, results are similar (see table), so filesystem aren't critical for productivity.
- X Windows in Linux works in client-server architecture and isn't too fast, Windows is better in GUI tasks.
- KDE is very comfort but weighs down system, Window Maker is simple, light and runs very fast.
- Linux won in CPU and DISK tasks, in Graphics tasks the results are similar, in GUI tasks Windows is better.

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