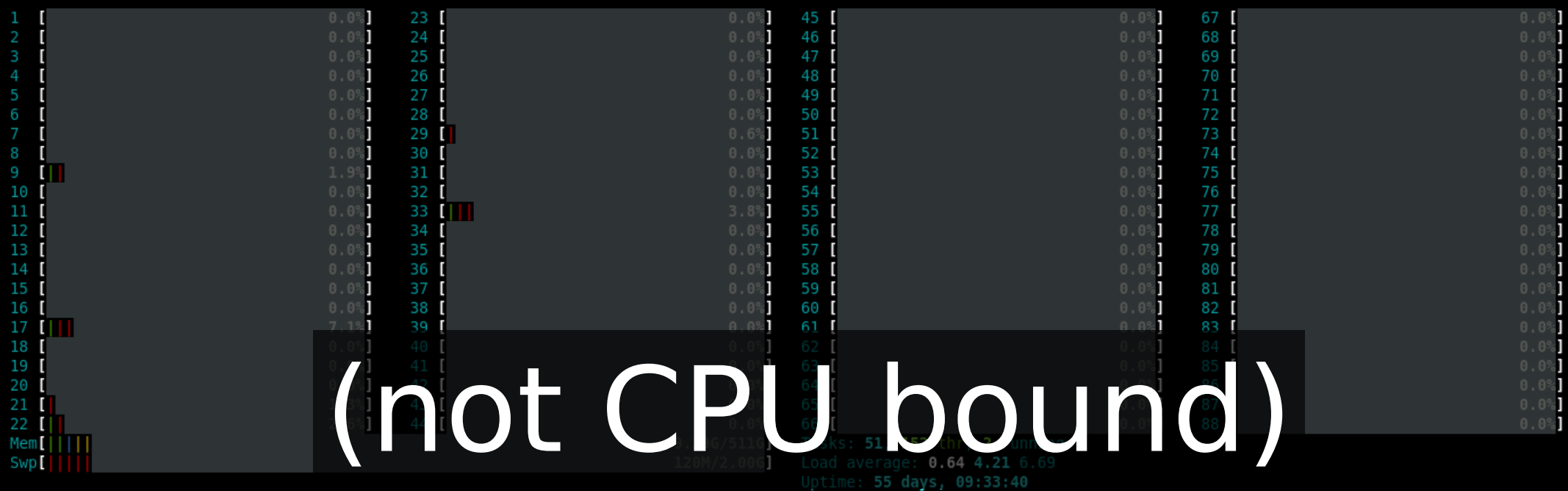


- Application Optimization
- Compile/Build time
- Advanced Perf
- Seeking Help

Terminal

File Edit View Search Terminal Tabs Help

Terminal x Terminal x Terminal x Terminal x



(not CPU bound)

PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
34486	danielgb	20	0	10048	1920	1856	S	0.0	0.0	0:00.16	SCREEN
34487	danielgb	20	0	10688	2240	2176	S	0.0	0.0	0:00.04	└ /bin/bash
13489	danielgb	20	0	20096	6528	5184	S	0.0	0.0	0:00.08	└ /lib/systemd/systemd --user
13490	danielgb	20	0	25408	64	0	S	0.0	0.0	0:00.00	└ (sd-pam)
154863	danielgb	20	0	23936	12672	4416	S	5.8	0.0	0:03.41	└ sshd: danielgb@pts/3
169079	danielgb	20	0	11712	8832	4992	S	0.0	0.0	0:00.11	└ -bash
12506	danielgb	20	0	10688	5056	3712	R	8.4	0.0	0:05.44	└ find /
155527	danielgb	20	0	4288	3584	2496	S	0.0	0.0	0:00.00	└ /usr/lib/openssh/sftp-server
169375	danielgb	20	0	10752	7872	4992	S	0.0	0.0	0:00.13	└ -su
12505	danielgb	20	0	6528	1408	960	S	0.0	0.0	0:00.00	└ dd if=/dev/random of=out.dd

F1 Help F2 Setup F3 Search F4 Filter F5 Sorted F6 Collap F7 Nice - F8 Nice + F9 Kill F10 Quit

Application optimization

Terminal

File Edit View Search Terminal Tabs Help

Terminal x Terminal x Terminal x Terminal x

```
1 [|||||100.0%] 23 [|||||100.0%] 45 [|||||100.0%] 67 [|||||100.0%]
2 [|||||100.0%] 24 [|||||100.0%] 46 [|||||100.0%] 68 [|||||100.0%]
3 [|||||100.0%] 25 [|||||100.0%] 47 [|||||100.0%] 69 [|||||100.0%]
4 [|||||100.0%] 26 [|||||100.0%] 48 [|||||100.0%] 70 [|||||100.0%]
5 [|||||100.0%] 27 [|||||100.0%] 49 [|||||100.0%] 71 [|||||100.0%]
6 [|||||100.0%] 28 [|||||100.0%] 50 [|||||100.0%] 72 [|||||100.0%]
7 [|||||100.0%] 29 [|||||100.0%] 51 [|||||100.0%] 73 [|||||100.0%]
8 [|||||100.0%] 30 [|||||100.0%] 52 [|||||100.0%] 74 [|||||100.0%]
9 [|||||100.0%] 31 [|||||100.0%] 53 [|||||100.0%] 75 [|||||100.0%]
10 [|||||100.0%] 32 [|||||100.0%] 54 [|||||100.0%] 76 [|||||100.0%]
11 [|||||100.0%] 33 [|||||100.0%] 55 [|||||100.0%] 77 [|||||100.0%]
12 [|||||100.0%] 34 [|||||100.0%] 56 [|||||100.0%] 78 [|||||100.0%]
13 [|||||100.0%] 35 [|||||100.0%] 57 [|||||100.0%] 79 [|||||100.0%]
14 [|||||100.0%] 36 [|||||100.0%] 58 [|||||100.0%] 80 [|||||100.0%]
15 [|||||100.0%] 37 [|||||100.0%] 59 [|||||100.0%] 81 [|||||100.0%]
16 [|||||100.0%] 38 [|||||100.0%] 60 [|||||100.0%] 82 [|||||100.0%]
17 [|||||100.0%] 39 [|||||100.0%] 61 [|||||100.0%] 83 [|||||100.0%]
18 [|||||100.0%] 40 [|||||100.0%] 62 [|||||100.0%] 84 [|||||100.0%]
19 [|||||100.0%] 41 [|||||100.0%] 63 [|||||100.0%] 85 [|||||100.0%]
20 [|||||100.0%] 42 [|||||100.0%] 64 [|||||100.0%] 86 [|||||100.0%]
21 [|||||100.0%] 43 [|||||100.0%] 65 [|||||100.0%] 87 [|||||100.0%]
22 [|||||100.0%] 44 [|||||100.0%] 66 [|||||100.0%] 88 [|||||100.0%]
```

(CPU bound)

```
Mem [|||||]
Swp [|||||]
Load average: 18.42 10.70 7.33
Uptime: 55 days, 09:23:59
```

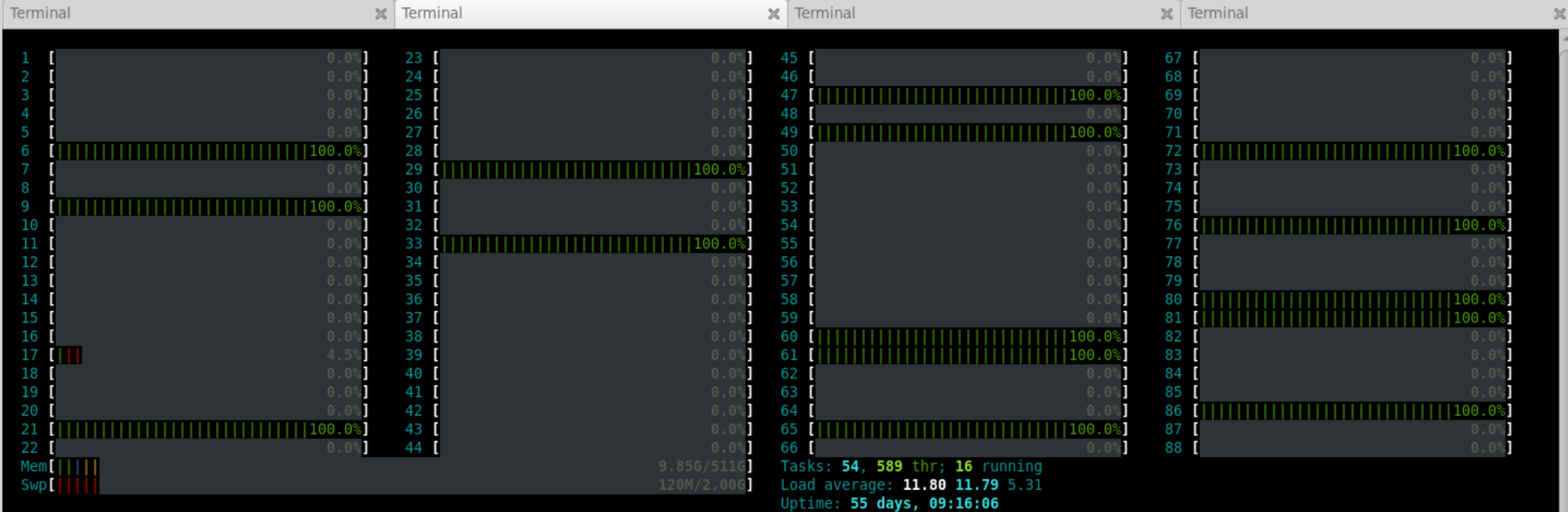
PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
12150	danielgb	20	0	8000	4928	3584	R	97.4	0.0	0:11.48	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12156	danielgb	20	0	8000	4928	3584	R	97.4	0.0	0:11.29	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12187	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.56	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12189	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.56	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12195	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.51	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12196	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.37	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12183	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.49	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12191	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.49	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12177	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.50	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12178	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.56	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12180	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.56	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12181	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.56	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12166	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.53	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12162	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.51	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12201	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.51	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12134	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.47	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12170	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.45	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12173	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.45	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096
12174	danielgb	20	0	8000	4928	3584	R	96.8	0.0	0:11.45	./openssl-1.1.0f/apps/openssl speed -multi 88 rsa4096

F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 SortBy F7 Nice - F8 Nice + F9 Kill F10 Quit

Application optimization
CPU bound on all threads

Terminal

File Edit View Search Terminal Tabs Help



PID	USER	PRI	NI	VIRT	RES	SHR	S	CPU%	MEM%	TIME+	Command
175587	danielgb	20	0	5677M	624M	105M	S	1499	0.1	6:10.62	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175884	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175923	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.28	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175906	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175915	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175921	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175924	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.27	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175866	danielgb	20	0	5677M	624M	105M	R	100.	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175881	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175920	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.29	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175897	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.25	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175878	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.25	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175913	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.29	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175885	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.26	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175902	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.24	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
175925	danielgb	20	0	5677M	624M	105M	R	99.6	0.1	0:24.27	blender -noaudio --enable-autoexec -b benchmark/pabellon_barcelona/pavillon_barcelone_gpu.blend -o output.test -x
170739	root	20	0	12800	8064	4608	R	3.8	0.0	0:08.48	htop
46514	mysql	20	0	6773M	89536	22784	S	0.0	0.0	6:26.32	/usr/sbin/mysqld
3904	root	20	0	85312	4160	2880	S	0.0	0.0	56:22.93	/usr/sbin/irqbalance --foreground

F1 Help F2 Setup F3 Search F4 Filter F5 Tree F6 SortBy F7 Nice - F8 Nice + F9 Kill F10 Quit

Application optimization
Blender not configured for parallelism
not all CPUs are used

Note this is phoronix CPU - gpu

Install Perf

```
# apt install linux-tools #TODO check
```

Installing debug symbols

(Ubuntu-18.04)

```
# echo "deb http://ddebs.ubuntu.com $(lsb_release -cs) main restricted universe multiverse  
deb http://ddebs.ubuntu.com $(lsb_release -cs)-updates main restricted universe multiverse  
deb http://ddebs.ubuntu.com $(lsb_release -cs)-proposed main restricted universe multiverse" |  
sudo tee -a /etc/apt/sources.list.d/ddebs.list
```

```
# sudo apt install ubuntu-dbgsym-keyring
```

```
# apt-get install blender-dbgsym
```

```
# Compile your own:
```

```
CFLAGS+=' -g '
```

TODO RHEL perf package + debug symbols process

Terminal

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Overhead	Shared Object	Symbol
37.47%	blender	[.] ZN3ccll39BVH bvh intersect shadow all instancingEPNS_13KernelGlobalsEPKNS_3RayEPNS_12IntersectionEijPj
23.25%	blender	[.] ZN3ccll28BVH bvh intersect_instancingEPNS_13KernelGlobalsEPKNS_3RayEPNS_12IntersectionEj
6.26%	blender	[.] ZN3ccll6perlinEfff
4.72%	blender	[.] ZN3ccll14svm_eval_nodesEPNS_13KernelGlobalsEPNS_10ShaderDataEPNS_9PathStateENS_10ShaderTypeEi
2.94%	blender	[.] ZN3ccll17kernel_path_traceEPNS_13KernelGlobalsEPfPjiiii
2.60%	blender	[.] ZN3ccll21shader_setup_from_rayEPNS_13KernelGlobalsEPNS_10ShaderDataEPKNS_12IntersectionEPKNS_3RayE
2.38%	blender	[.] ZN3ccll26kernel_path_surface_bounceEPNS_13KernelGlobalsEPjPNS_10ShaderDataEPNS_6float3EPNS_9PathStateEPNS_12PathRadianceEPNS_3R
2.13%	blender	[.] ZN3ccll9bsdf_evalEPNS_13KernelGlobalsEPNS_10ShaderDataEPKNS_13ShaderClosureENS_6float3EPf.isra.200.constprop.462
2.04%	blender	[.] ZN3ccll17svm_image_textureEPNS_13KernelGlobalsEiffjj
1.57%	blender	[.] ZN3ccll21svm_node_closure_bsdfEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4EiPi.isra.231
1.27%	libm-2.27.so	[.] powf
1.19%	blender	[.] ZN3ccll15direct_emissionEPNS_13KernelGlobalsEPNS_10ShaderDataES3_PNS_11LightSampleEPNS_9PathStateEPNS_3RayEPNS_8BsdfEvalEPbf
0.90%	perf	[.] init
0.82%	blender	[.] ZN3ccll25triangle_attribute_float3EPNS_13KernelGlobalsEPKNS_10ShaderDataENS_19AttributeDescriptorEPNS_6float3ES7.isra.282
0.80%	blender	[.] ZN3ccll12light_sampleEPNS_13KernelGlobalsEffffNS_6float3EiPNS_11LightSampleE.isra.276
0.57%	blender	[.] ZN3ccll15sobol_dimensionEPNS_13KernelGlobalsEii
0.53%	libm-2.27.so	[.] sincosf32
0.48%	blender	[.] ZN3ccll31bsdf_microfacet beckmann sampleEPNS_13KernelGlobalsEPKNS_13ShaderClosureENS_6float3ES5_S5_S5_ffP5_S6_S6_S6_Pf.isra.20
0.46%	blender	[.] ZN3ccll16svm_node_convertEPNS_10ShaderDataEPfjjj.isra.91
0.44%	blender	[.] ZN3ccll13svm_node_attrEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.247
0.42%	blender	[.] ZN3ccll17svm_node_set_bumpEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.92
0.39%	blender	[.] ZN3ccll18svm_node_tex_imageEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.297
0.33%	blender	[.] ZN3ccll25camera_sample_perspectiveEPNS_13KernelGlobalsEffffPNS_3RayE
0.29%	blender	[.] ZN3ccll21svm_node_attr_bump_dxEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.248
0.28%	blender	[.] ZN3ccll7svm_mixENS_7NodeMixEfNS_6float3ES1.isra.157
0.28%	blender	[.] ZN3ccll21svm_node_attr_bump_dyEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.249
0.24%	[kernel]	[k] rcu_check_callbacks
0.24%	blender	[.] ZN3ccll22svm_node_tex_image_boxEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4E.isra.298
0.22%	blender	[.] ZN3ccll15svm_node_curvesEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4Epi.isra.258
0.21%	blender	[.] ZN3ccll21svm_node_layer_weightEPNS_10ShaderDataEPfNS_5uint4E.isra.178
0.20%	blender	[.] ZN3ccll26bsdf_microfacet_ggx_sampleEPNS_13KernelGlobalsEPKNS_13ShaderClosureENS_6float3ES5_S5_S5_ffP5_S6_S6_S6_Pf.isra.150
0.19%	blender	[.] ZN3ccll16noise_turbulenceENS_6float3Efi.isra.207.constprop.486
0.18%	blender	[.] ZN3ccll30shadow_blocked_transparent_allEPNS_13KernelGlobalsEPNS_10ShaderDataEPNS_9PathStateEiPNS_3RayEjPNS_6float3E
0.16%	[kernel]	[k] update_curr
0.16%	blender	[.] ZN3ccll18svm_node_tex_noiseEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4Epi.isra.233
0.14%	blender	[.] ZN3ccll16svm_node_tex_skyEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4Epi.isra.254
0.12%	blender	[.] 00000000.plt_call._powf_finite
0.12%	blender	[.] ZN3ccll18svm_node_tex_coordEPNS_13KernelGlobalsEPNS_10ShaderDataEiPfNS_5uint4Epi.isra.265
0.11%	[kernel]	[k] task_tick_fair
0.09%	libm-2.27.so	[.] _acosf_finite
0.08%	blender	[.] ZN3ccll17svm_node_rgb_rampEPNS_13KernelGlobalsEPNS_10ShaderDataEPfNS_5uint4Epi.isra.257
0.07%	blender	[.] ZN3ccll19indirect_backgroundEPNS_13KernelGlobalsEPNS_10ShaderDataEPNS_9PathStateEPNS_3RayE
0.07%	[kernel]	[k] hrtimer_active
0.07%	[kernel]	[k] decay_load
0.06%	[kernel]	[k] _raw_spin_lock

/usr/lib/powerpc64le-linux-gnu/libglib-2.0.so.0.5600.1 was updated (is prelink enabled?). Restart the long running apps that use it!

C++ mangled, but resolvable

Highlight two functions that could be optimized (for CPU rendering)

(note: probably not worth it - blender upstream focusing on GPU renders)

Samples: 120K of event 'cycles:ppp', Event count (approx.): 85941223344

Children	Self	Command	Shared Object	Symbol
+ 100.00%	0.00%	python	[unknown]	[k] 0000000000000000
+ 100.00%	0.00%	python	libc-2.27.so	[.] __libc_start_main
+ 100.00%	0.00%	python	libc-2.27.so	[.] 0x0000000000002441c
+ 100.00%	0.00%	python	python2.7	[.] Py_Main
+ 100.00%	0.00%	python	python2.7	[.] PyRun_AnyFileExFlags
+ 100.00%	0.00%	python	python2.7	[.] PyRun_SimpleFileExFlags
+ 100.00%	0.00%	python	python2.7	[.] PyRun_FileExFlags
+ 100.00%	0.00%	python	python2.7	[.] 0x0000000000011b13c
+ 100.00%	0.00%	python	python2.7	[.] PyEval_EvalCode
+ 100.00%	0.00%	python	python2.7	[.] PyEval_EvalCodeEx
+ 100.00%	0.00%	python	python2.7	[.] PyEval_EvalFrameEx
+ 99.99%	0.00%	python	python2.7	[.] PyCFunction_Call
+ 87.14%	0.00%	python	multirray.powerpc64le-linux-gnu.so	[.] _init
+ 87.12%	0.00%	python	multirray.powerpc64le-linux-gnu.so	[.] 0x0000000000010c12c
+ 87.12%	0.00%	python	libblas.so.3.7.1	[.] cblas_dgemm
+ 12.84%	0.57%	python	mtrand.powerpc64le-linux-gnu.so	[.] _init
+ 11.85%	0.18%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_normal
+ 10.57%	3.80%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_gauss
+ 4.41%	0.14%	python	libm-2.27.so	[.] logf32x
+ 4.27%	4.27%	python	libm-2.27.so	[.] __log_finite
+ 2.34%	2.34%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_random
+ 1.44%	1.44%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_double
+ 1.18%	0.00%	python	[unknown]	[.] 0x00007ffff882dfc0

Application optimization (scikit-learn)

perf record -g -o scikit-learn.perf -p `pidof python` sleep 30
perf report -q --percent-limit 1 -i scikit-learn.perf

TODO text top or bottom to avoid image conflict

```

Samples: 120K of event 'cycles:ppp', Event count (approx.): 85941223344
  Overhead  Command  Shared Object  Symbol
+  87.01%  python  libblas.so.3.7.1  [.] dgemm_
+  4.27%  python  libm-2.27.so  [.] log_finite
+  3.80%  python  mtrand.powerpc64le-linux-gnu.so  [.] rk_gauss
+  2.34%  python  mtrand.powerpc64le-linux-gnu.so  [.] rk_random
+  1.44%  python  mtrand.powerpc64le-linux-gnu.so  [.] rk_double

```

perf report -q --percent-limit 1 --no-children -i scikit-learn.perf

TODO text top or bottom to avoid image conflict

TODO work out headers

```
scikit-learn - blas vs openblas
```

```
# ./phoronix-test-suite run pts/scikit-learn-1.0.1
```

```
Scikit-Learn 0.17.1:  
  pts/scikit-learn-1.0.1
```

```
blas3:
```

```
  Result ..... 328.05 |=====
```

```
openblas:
```

```
  Result ..... 26.13 |=====
```

Samples: 209K of event 'cycles:ppp', Event count (approx.): 148929599041

Overhead	Command	Shared Object	Symbol
+ 36.27%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L4x16_LOOP
+ 9.24%	python	libopenblas_power8p-r0.2.20.so	[.] inner_thread
+ 8.99%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L4x16_LOOP_FIRST
+ 5.49%	python	libpthread-2.27.so	[.] __pthread_mutex_unlock
+ 4.61%	python	libpthread-2.27.so	[.] __pthread_mutex_lock
+ 4.26%	python	libm-2.27.so	[.] __log_finite
+ 4.03%	python	libopenblas_powerpc64le-linux-gnu.so	[.] 0x0000000000005684c
+ 3.81%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_gauss
+ 2.80%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L2x16_LOOP
+ 2.76%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L4x2_LOOP
+ 1.86%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_random
+ 1.86%	python	libc-2.27.so	[.] pthread_mutex_lock
+ 1.70%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L1x16_LOOP
+ 1.47%	python	mtrand.powerpc64le-linux-gnu.so	[.] rk_double
+ 1.15%	python	libopenblas_power8p-r0.2.20.so	[.] LDGEMM_L4x1_LOOP
+ 1.14%	python	_sparsetools.powerpc64le-linux-gnu.so	[.] 0x00000000000056840

scikit-learn - with openblas

perf report -q --no-children --percent-limit 1 -i scikit-learn-openblas.perf

Newer version

```
# openssl version
```

```
OpenSSL 1.1.0g 2 Nov 2017
```

```
# openssl speed -multi $(nproc) rsa4096
```

	sign	verify	sign/s	verify/s
rsa 4096 bits	0.000203s	0.000003s	4914.2	356788.4

```
# apps/openssl version
```

```
OpenSSL 1.1.2-dev xx XXX xxxx
```

	sign	verify	sign/s	verify/s
rsa 4096 bits	0.000109s	0.000002s	9182.1	657058.9

Samples: 34K of event 'cycles:uppp', Event count (approx.): 249726988

	Overhead	Command	Shared Object	Symbol
+	15.65%	lame	lame	[.] count_bits
+	9.42%	lame	lame	[.] ix_max
+	6.25%	lame	lame	[.] noquant_count_bits
+	6.15%	lame	lame	[.] quantize_lines_xrpow
+	5.16%	lame	lame	[.] count_bit_noESC_from3
+	4.88%	lame	lame	[.] vbrpsy_attack_detection
+	4.44%	lame	lame	[.] calc_noise_core_c
+	4.12%	lame	lame	[.] count_bit_noESC_from2
+	3.87%	lame	lame	[.] window_subband
+	3.18%	lame	lame	[.] vbrpsy_mask_add
+	2.92%	lame	lame	[.] quantize_xrpow
+	2.64%	lame	lame	[.] calc_noise
+	2.63%	lame	lame	[.] filterYule
+	2.60%	lame	lame	[.] fht
+	2.35%	lame	lame	[.] amp_scalefac_bands
+	2.13%	lame	lame	[.] vbrpsy_compute_masking_l
+	2.03%	lame	lame	[.] vbrpsy_compute_fft_l
+	2.02%	lame	libm-2.27.so	[.] __log_finite
+	1.26%	lame	lame	[.] calc_energy
+	0.99%	lame	lame	[.] mpeg1_scale_bitcount
+	0.96%	lame	lame	[.] count_bit_ESC
+	0.92%	lame	libm-2.27.so	[.] sqrtf32x
+	0.86%	lame	lame	[.] mdct_sub48
+	0.85%	lame	lame	[.] fft_long
+	0.77%	lame	lame	[.] quantize_lines_xrpow_01

Compile/Build time (lame)

Phoronix test - pts/lame-`{ver}`

Analysis by Joel

top function - `count_bit` - sounds too simple to get such a large use

```
CFLAGS=-save-temps ./configure
```

Live demo: <https://gcc.godbolt.org/>

lame.c count_bits on Compiler Explorer

clang (trunk)

to create xxx.i (expanded preprocessor)

DO --target=powerpc64le

Compare:

compiler version - clang-4 vs 5, 6, 7

Show -O0 vs -O2 / -O3

-mcpu=power8 vs -mcpu=power9

Install:

```
~/phoronix-test-suite/installed-tests/pts/encode-mp3-1.7.0/install.log
```

```
libtool: compile: gcc -DHAVE_CONFIG_H -I. -I.. -I../include -I.  
-I../libmp3lame -I.. -MT common.lo -MD -MP -MF .deps/common.Tpo -c  
common.c -fPIC -DPIC -o .libs/common.o
```

No: -O flags

```
In .phoronix-test-suite/test-profiles/pts/encode-mp3-1.7.0/install.sh  
  
export CFLAGS="-O3 -mcpu=power9"  
  
# ./phoronix-test-suite remove-test-suite pts/encode-mp3-1.7.0  
# ./phoronix-test-suite install pts/encode-mp3-1.7.0
```


TODO explain the -DUSE_FAST_LOG

[TODO mariadb oltp sysbench ro (maybe with charset=binary)
perf report

glibc hotspots, tuneables etc 2.27 (on Ubuntu-18.04)

Compare build logs x86_64 vs ppc64el,
high level build *.spec, debian/rules, configure.{in.ac}

configure/cmake output.
General build output.

What helps: -O2

<https://launchpad.net/ubuntu/+source/lame>

-> Distro release/version

<https://launchpad.net/ubuntu/+source/lame/3.100-2>

-> Binary package name

<https://launchpad.net/ubuntu/bionic/+package/lame>

-> version

<https://launchpad.net/ubuntu/bionic/ppc64el/lame/3.100-2>

-> downloadable file (build)

<https://launchpad.net/ubuntu/+source/lame/3.100-2/+build/13657377>

-> build.log

https://launchpadlibrarian.net/343947135/buildlog_ubuntu-bionic-ppc64el.lame_3.100-2_BUILDING.txt.gz

Ubuntu build logs

<https://koji.fedoraproject.org/koji>

-> package name

-> build.log (towards bottom)

..

```
libtool: compile: gcc -DHAVE_CONFIG_H -I. -I.. -I../include -I.  
-I../libmp3lame -I.. -O2 -g -pipe -Wall -Werror=format-security  
-Wp,-D_FORTIFY_SOURCE=2 -Wp,-D_GLIBCXX_ASSERTIONS -fexceptions  
-fstack-protector-strong -grecord-gcc-switches  
-specs=/usr/lib/rpm/redhat/redhat-hardened-cc1  
-specs=/usr/lib/rpm/redhat/redhat-annobin-cc1 -m64 -mcpu=power8  
-mtune=power8 -fasynchronous-unwind-tables -fstack-clash-protection  
-c common.c -fPIC -DPIC -o .libs/common.o
```

For spec files, package source: <https://src.fedoraproject.org>

Recent compilers:

AT / gcc / clang

flamescope

CPI - full

false sharing???

cache line assumptions

thread/cpu assumptions

relaxed locking types

perf stats (P8 only), will return P10

Fedora build logs

KVM - probably not enough time

- no pinning to CPUs

P8 - don't rely on top - many things are deceptive

P9 - use radix mode

kernel doesn't know about co-dependent workloads

Summary

- recent versions
- optimized ABI equivalent libraries
- CFLAGS
- experimental features

Getting help:

linuxppc-users@lists.ozlabs.org

<https://stackoverflow.com/questions/tagged/powerpc>

Open Source - bountysource

Distro support

Compiler Explorer