The Biggest Technical Challenges for a Block Producer

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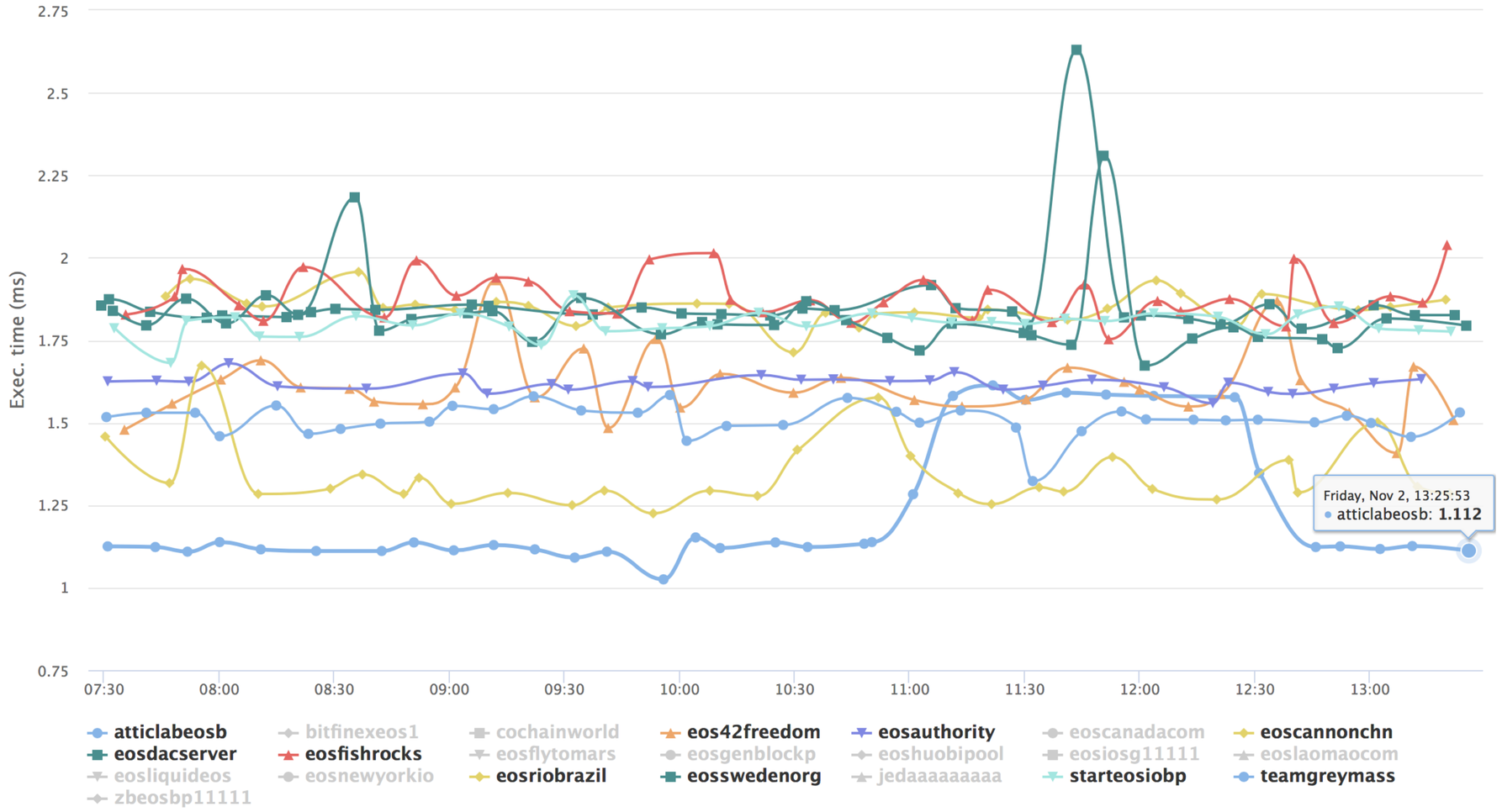
III

CPU Performance Outlook



- 10 BPs manage to generate blocks in less than 2ms!

Why Does CPU Speed Matter?

The faster the BPs sign blocks, the higher the throughput can be reached

The Revolution

v1.3 + wabt	~ 15 ms
v1.3 + wabt	~ 7 ms
v1.4.1 + wabt + CPU optimization	~ 1.2 ms

How To Boost CPU

Isolate core +
CPU affinity

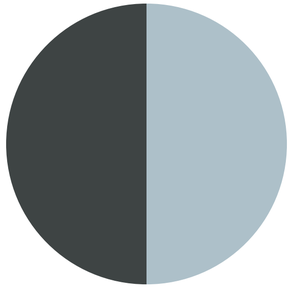
Optimize hardware

Optimize software

III

The Hardware Optimization

Intel Core i7 8700K

Switch off  Switch on

HyperThreading in BIOS	TurboSpeed
C-states	SpeedStep

III

The Software Optimization - Main

```
GRUB_CMDLINE_LINUX_DEFAULT="cpuidle.off=1 isolcpus=1
processor.ignore_ppc=1 processor.max_cstate=0 intel_idle.max_cstate=0
intel_pstate=enable"
# for x in /sys/devices/system/cpu/cpu[0-7]/cpufreq/;do
#  echo performance > $x/scaling_governor
# done

# taskset -cp 1 `pidof nodeos`
```

III

The Software Optimization - Additional

Switching off irqbalance

```
# for i in `pgrep rcu[^c]` ; do taskset -pc 0 $i ; done
# echo 1 > /sys/bus/workqueue/devices/writeback/cpumask
```

Other kernel variables

```
idle=poll
```

Summary

Hard real time kernel

-march=native

Overclocking

Documentation

<https://github.com/atticlab/eos-bp-performance>

Q&A