Improving responsiveness of interactive CFS tasks using util_est

LPC 2021 Sched MC

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Previously ...


util_est based boost trigger:

![Diagram showing cpu util_est and cpu util_avg with a boost trigger.](image)
Previously ...

[RFc,v4,0/6] sched/cpufreq: Make schedutil energy aware (by Douglas Raillard)

Improve frequency selection
Interactive workload

PCMark Web2:
Updated proposal

New per-task boost signal:

\[ \text{boost} = (\text{util}_\text{avg} - \text{util}_\text{est}) \times \text{FACTOR} + \text{util}_\text{avg} \]
Evaluate the proposal

• Pixel4

• Mainline’ish kernel/sched
  • No vendor value-add
  • No schedtune boosting

• 30 runs Android PCMark2

• Energy estimation based on idle states / frequency selection
PCMark: Data manipulation

Data manipulation  %change

NO STATISTICALLY SIGNIFICANT CHANGE
Removing `util_est.ewma`?

\[ \text{util}_{\text{est}} = \max(\text{enqueued, ewma}) \]
Removing util_est.ewma?

Web2 % change

Original

factor 1/2

no ewma

Performance

Energy

Unexpected results
Discussion ...