

Juice Sucking Servers

and how to put them on a diet

Today

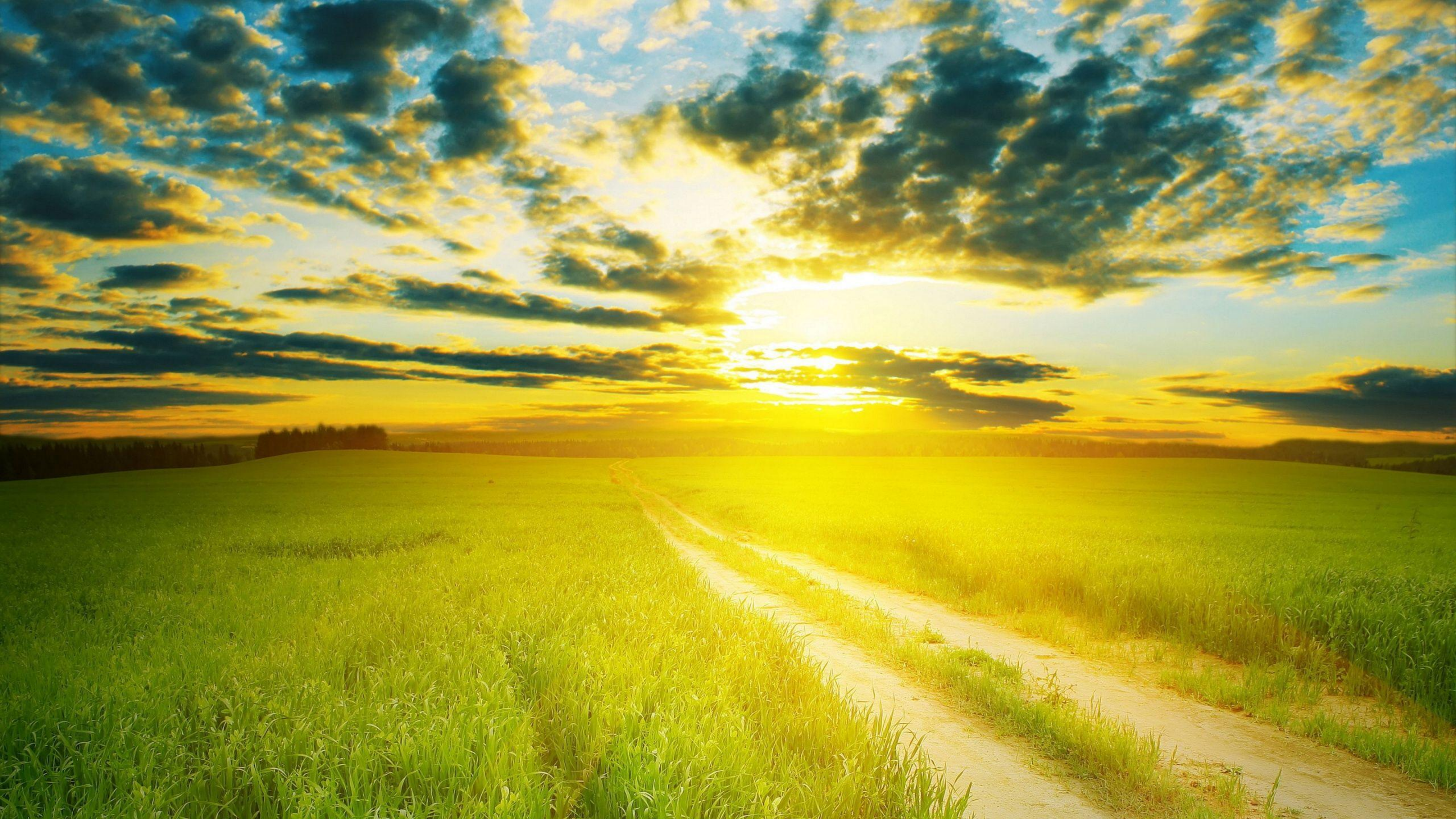
- Energy
 - idle
 - demand
- Performance
 - per language / framework

Who Am I

- Axel Roest
- software developer
- iOS & Mac
- iot enthusiast
- unix nerd

YOU

The Cloud?





Background

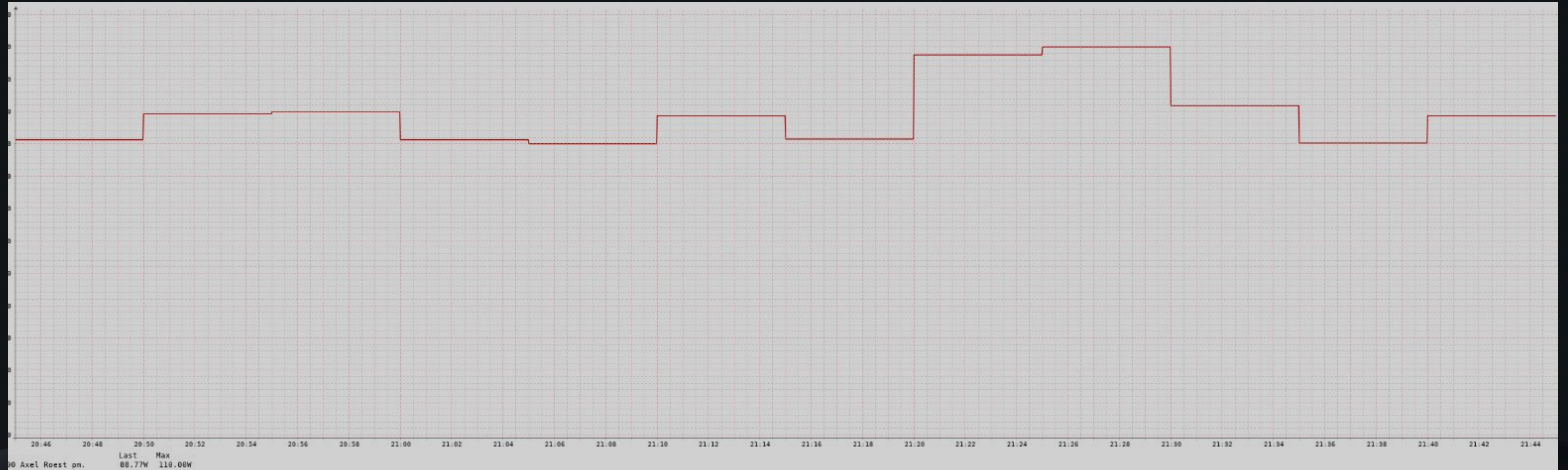
ColoClue Association

- <https://coloclue.net>
- own hardware
- advanced networking possibilities
- power measurements

Power measurements idle



Power measurements testing



Power Measurements

Power Measurements

€€€

Power Measurements

€€€

- power
- sensors
- fancontrol

Power Measurements

€€€

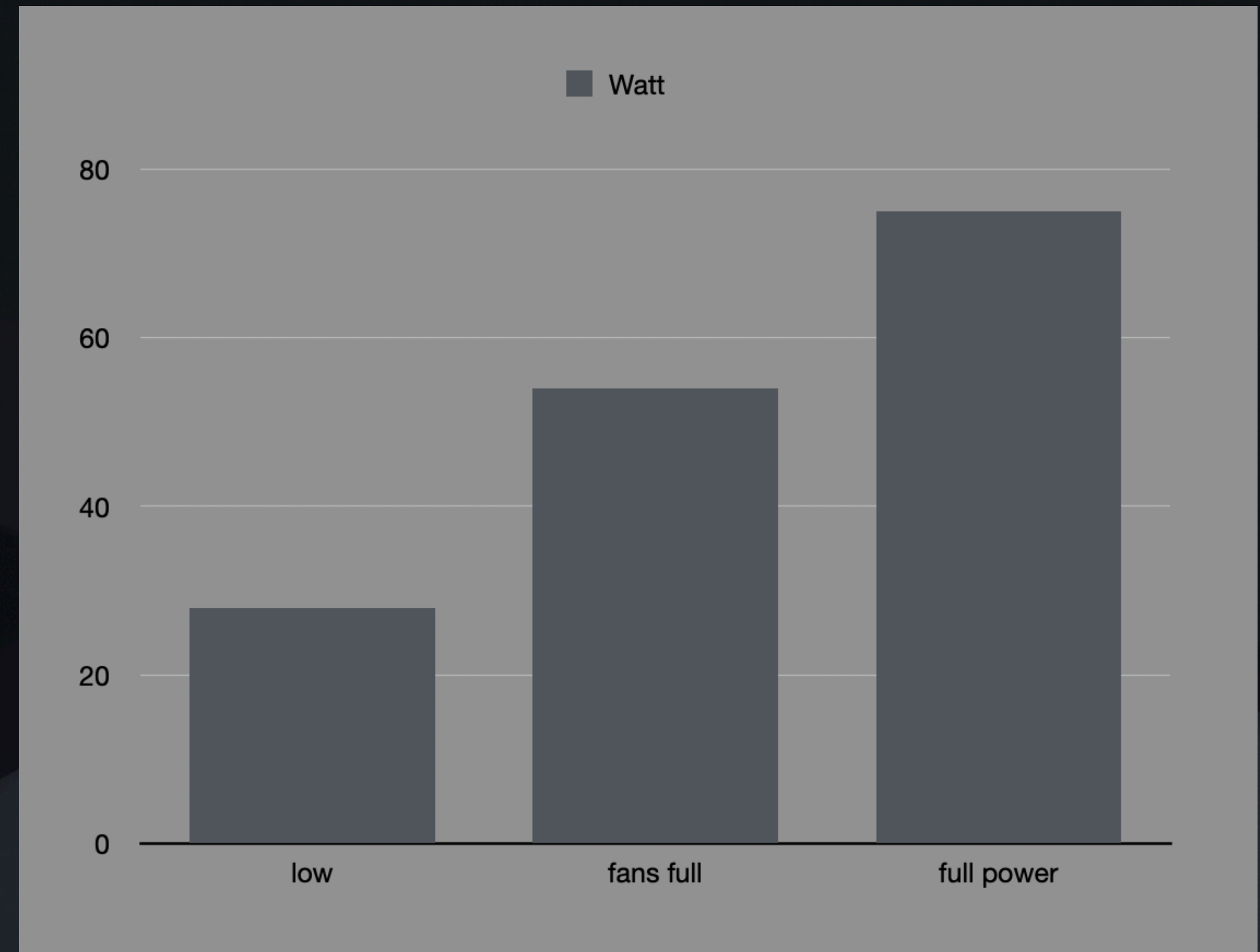
- Sonoff POWR316D
- Tasmota



Power Measurements

€€€

- fans off → 28W
- on → 54W → double!
- in demand → 78W



Software

Impact of Web Technology

Efficiency?

- Most prolific web languages
 - nodejs
 - php
 - java
 - swift

Efficiency

- requests → responses
 - speed
 - load
 - timeouts (2 seconds)

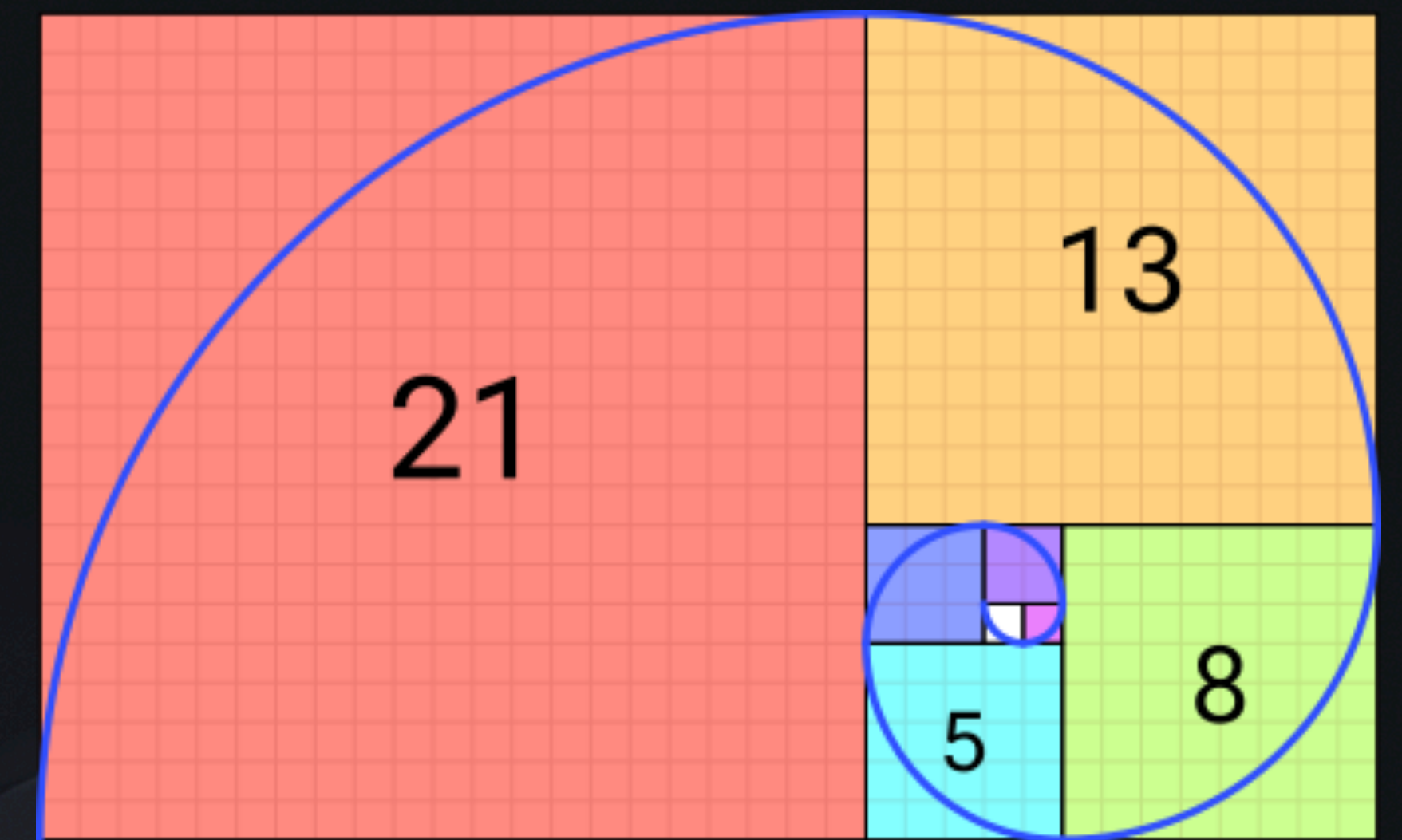
How

Test Benchmarks

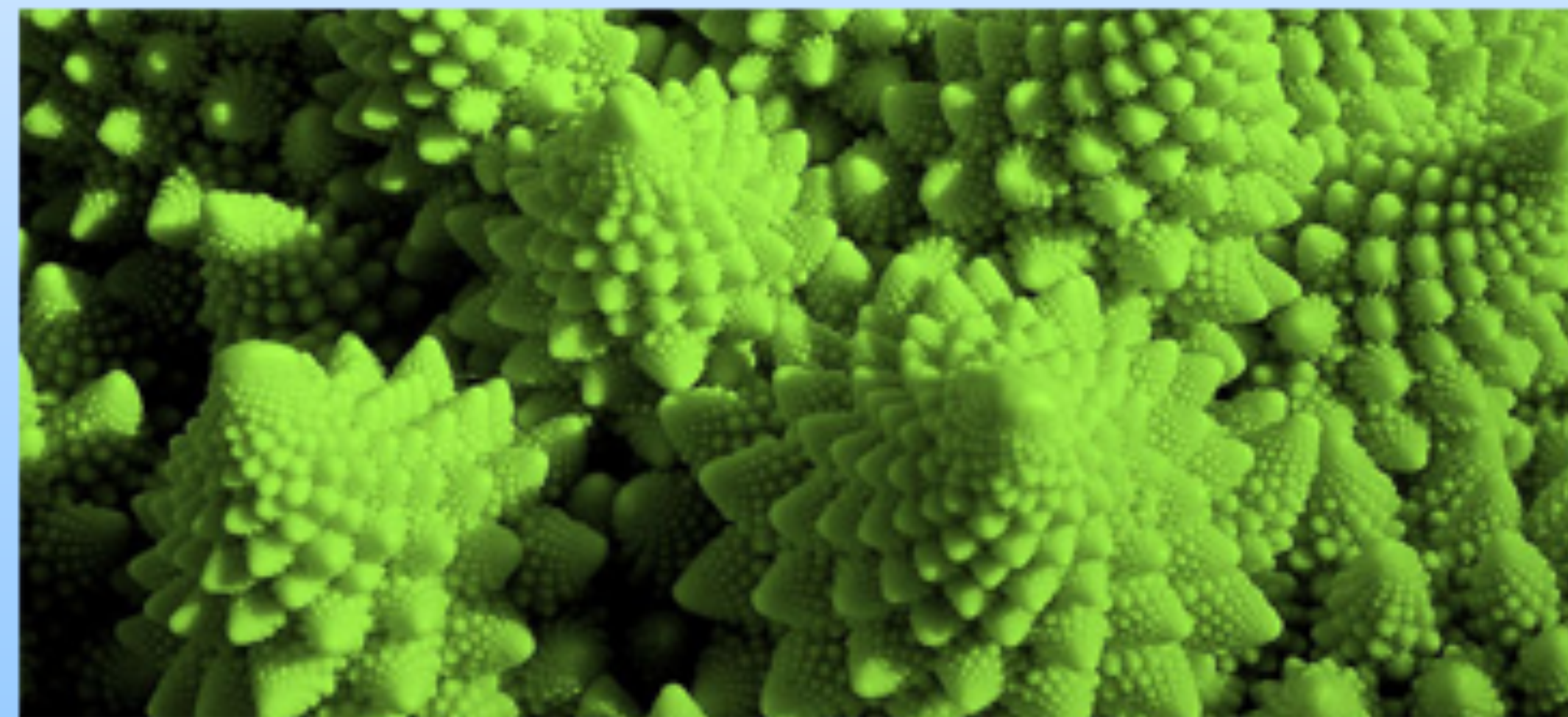
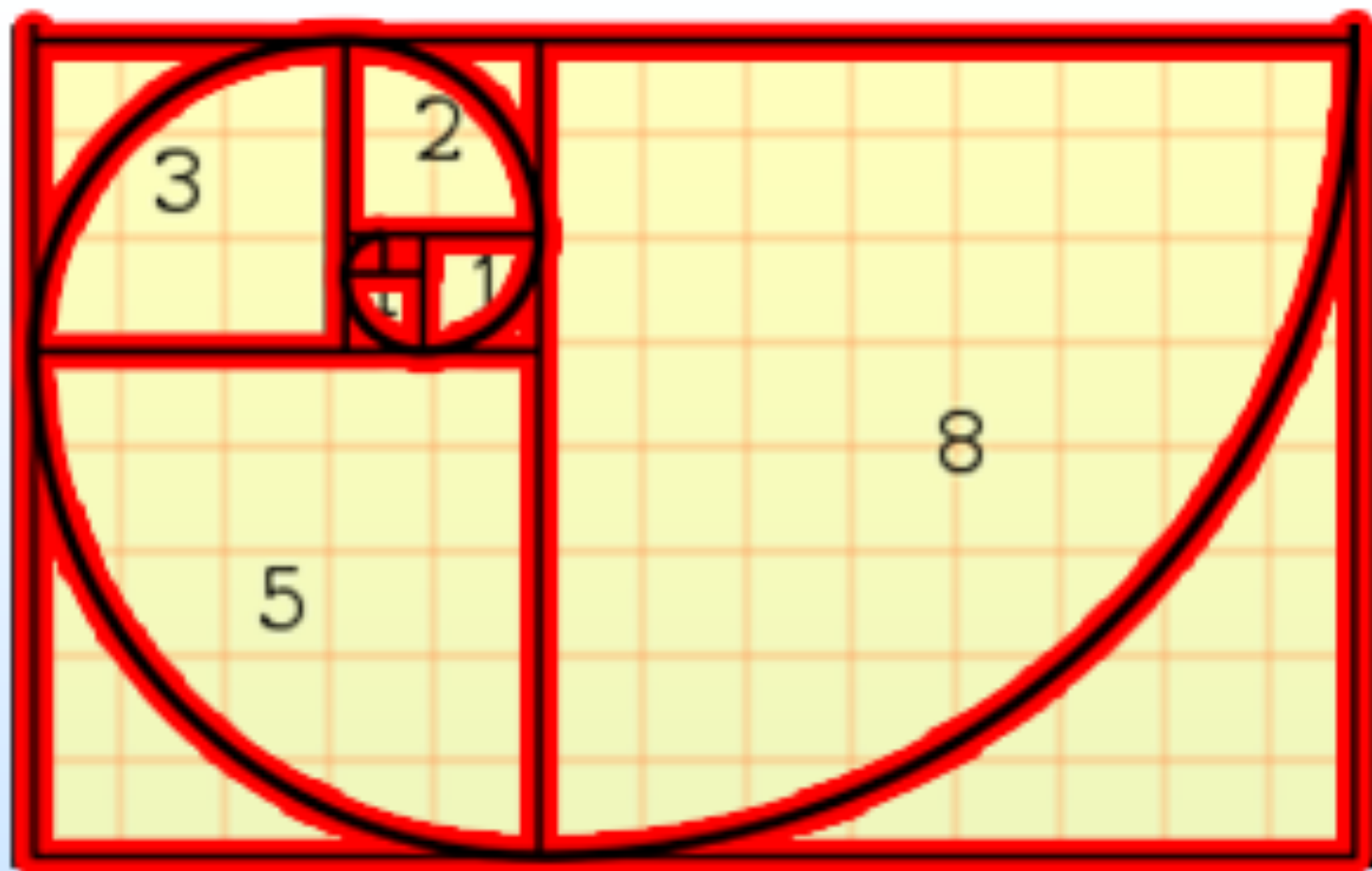
- algorithm with low bandwidth requirements
- no database
- 'pure function'
- → fibonacci sequence

Fibonacci

- 0, 1
- $n + n-1$
- $0 \rightarrow 1 \rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 5 \rightarrow 8 \rightarrow \dots \rightarrow$



Golden Ratio



Disclaimer

I am not a pro web developer

- javascript
- php
- java
- swift only



ChatGPT!

ChatGPT!

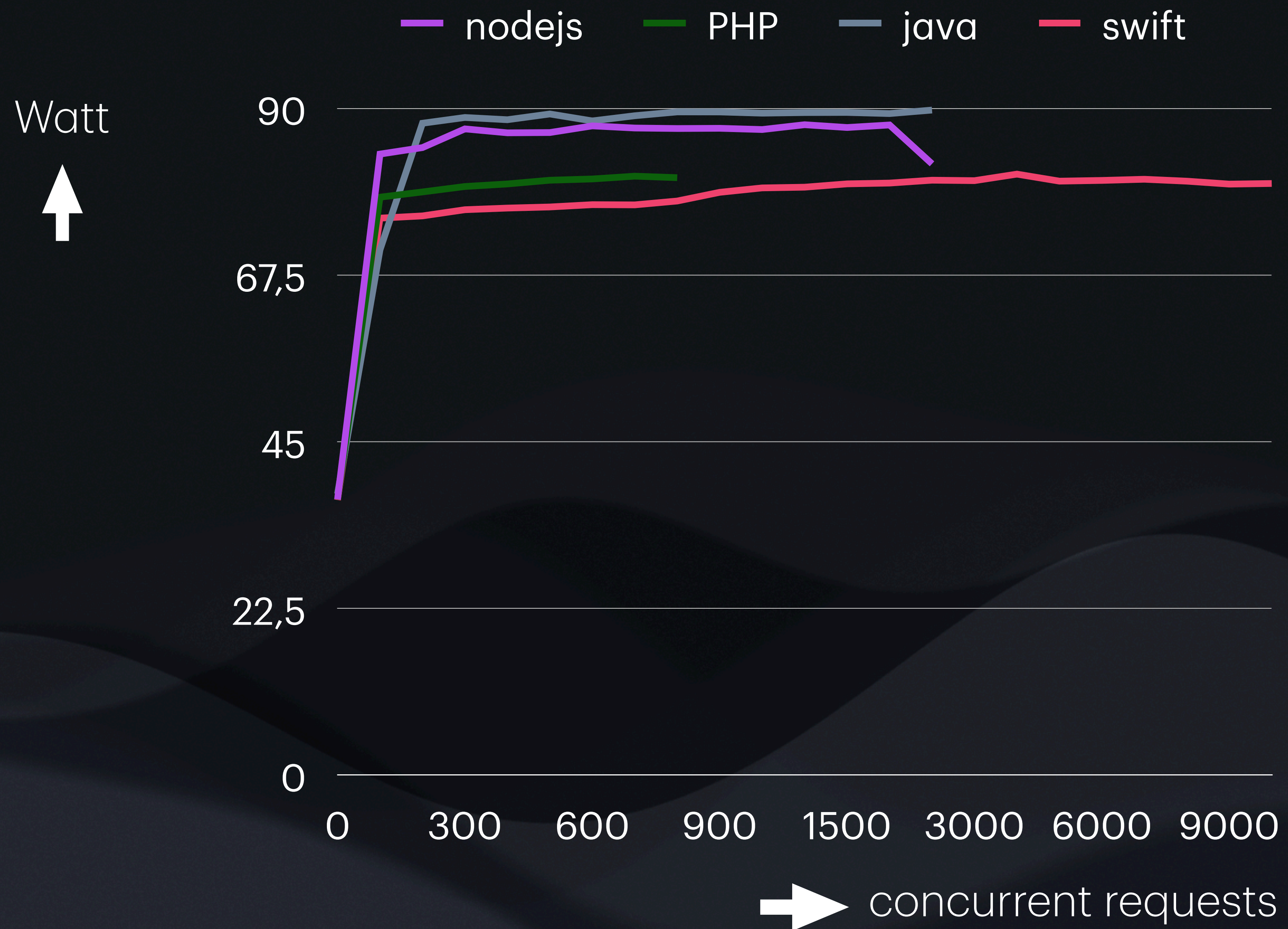
- javascript & php

- java

Power Measurements 2

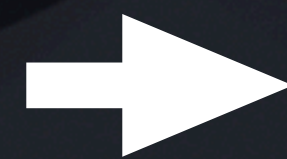
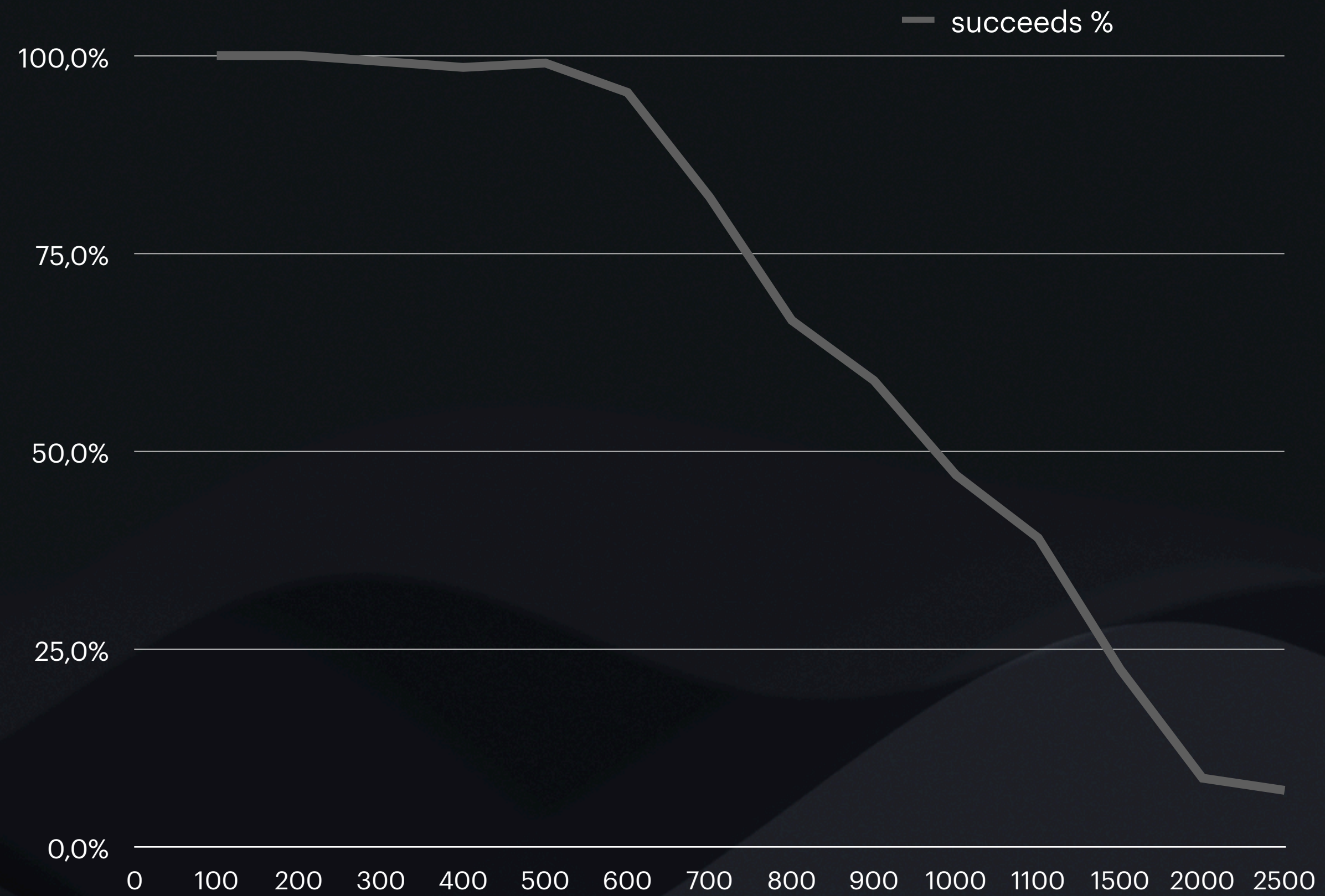
- Power ↑↑,
- amount of work is different per technology

Power



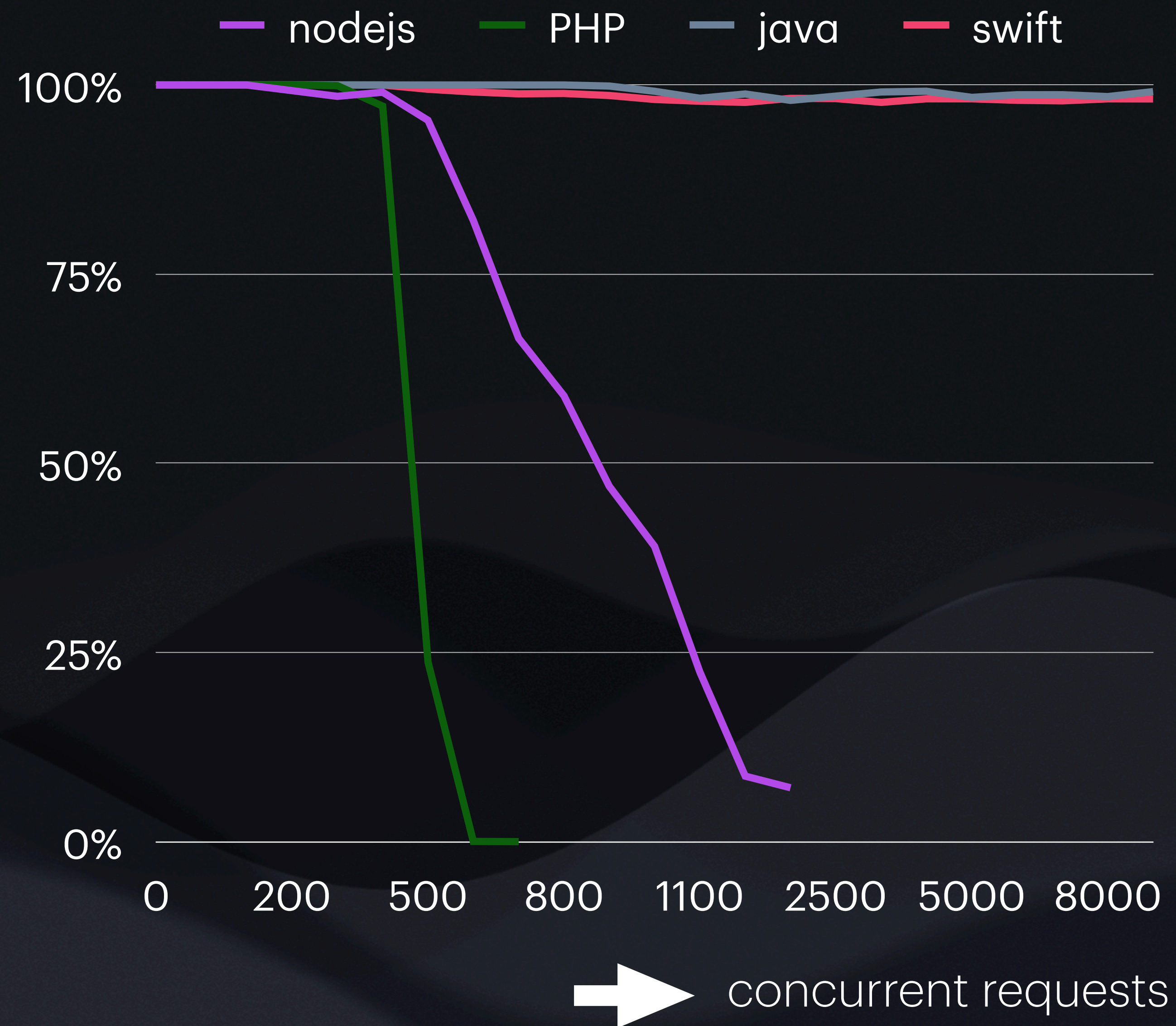
Responses

answers

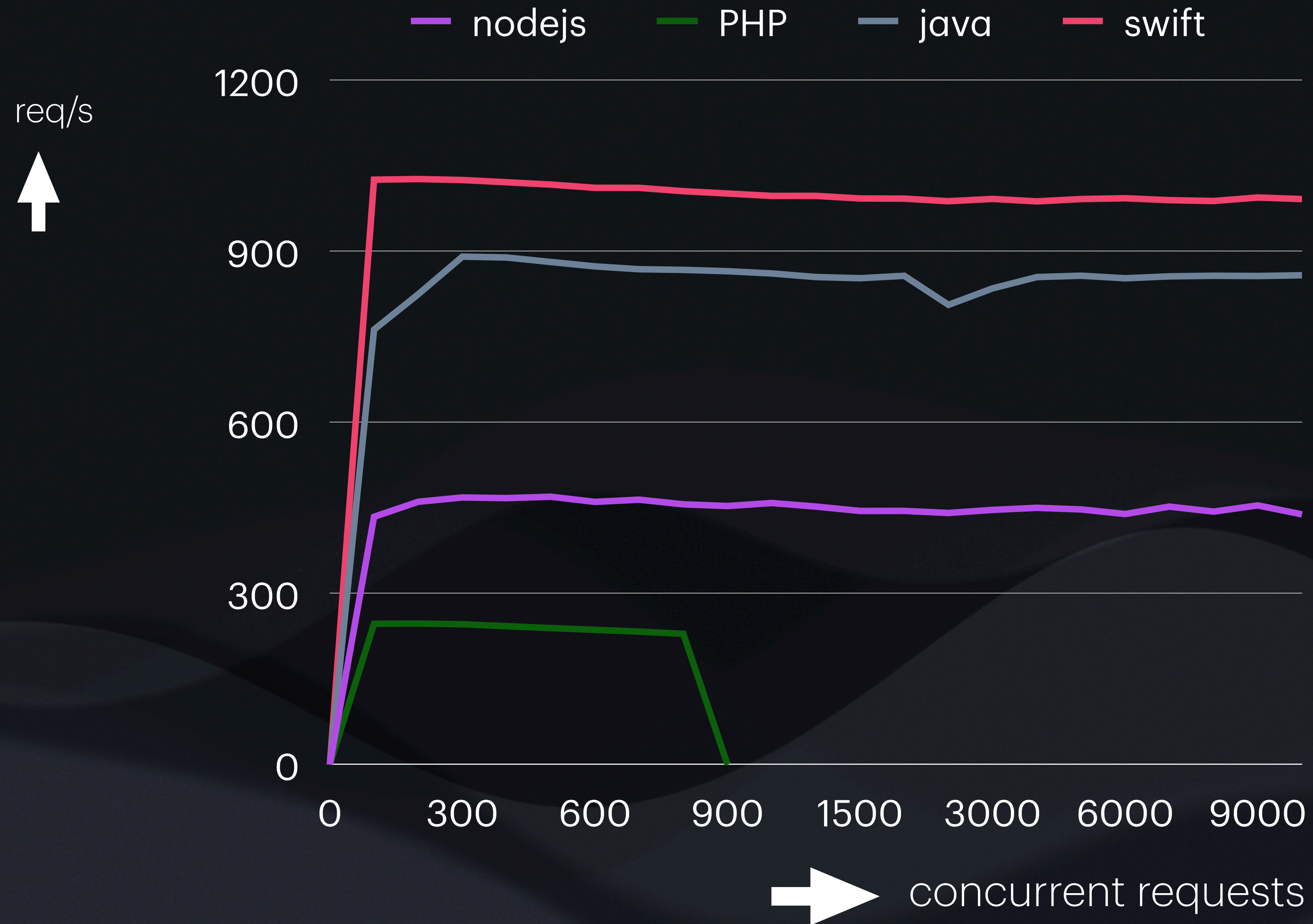


concurrent requests

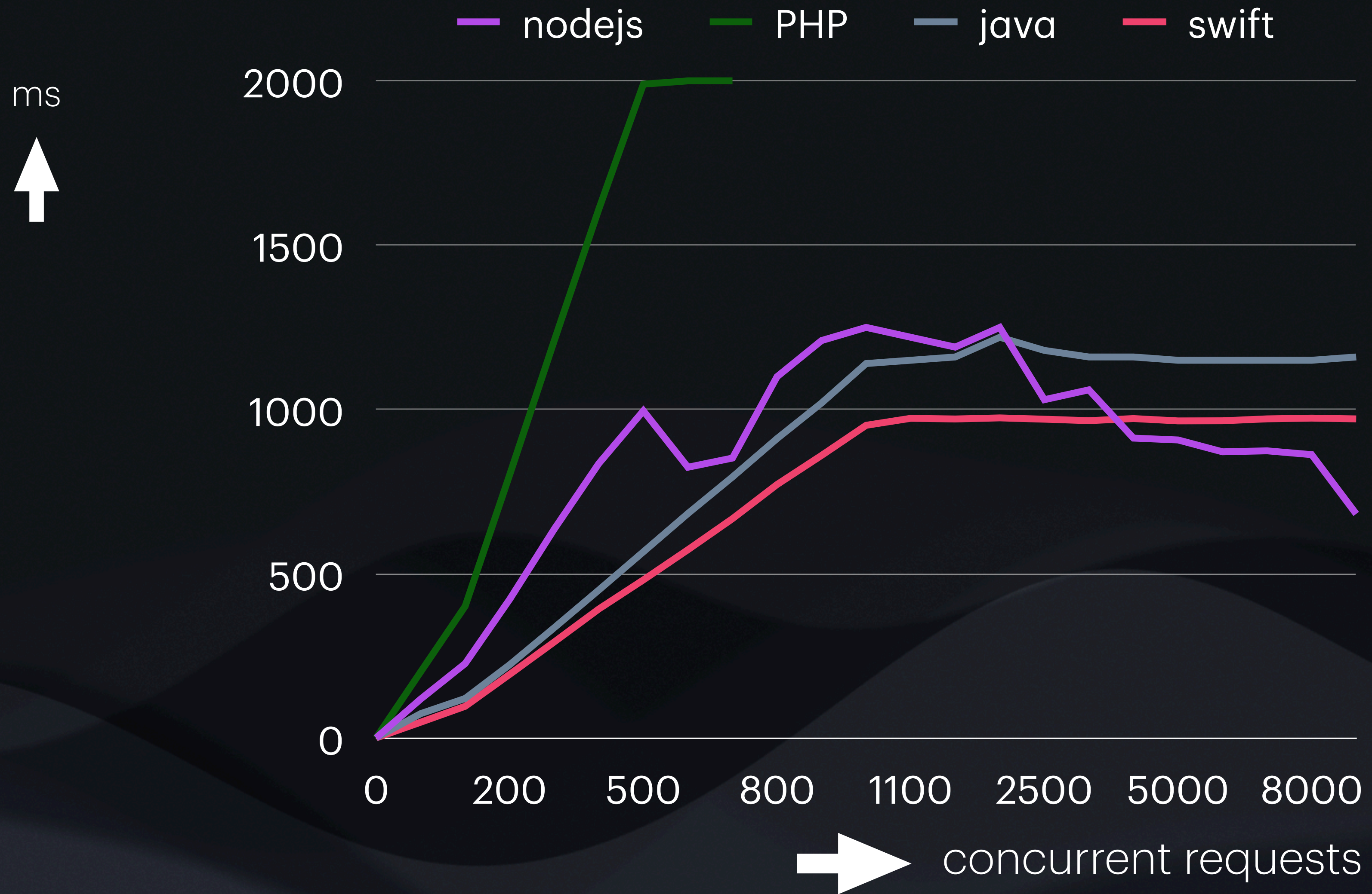
Answers



Concurrent Requests



Latency





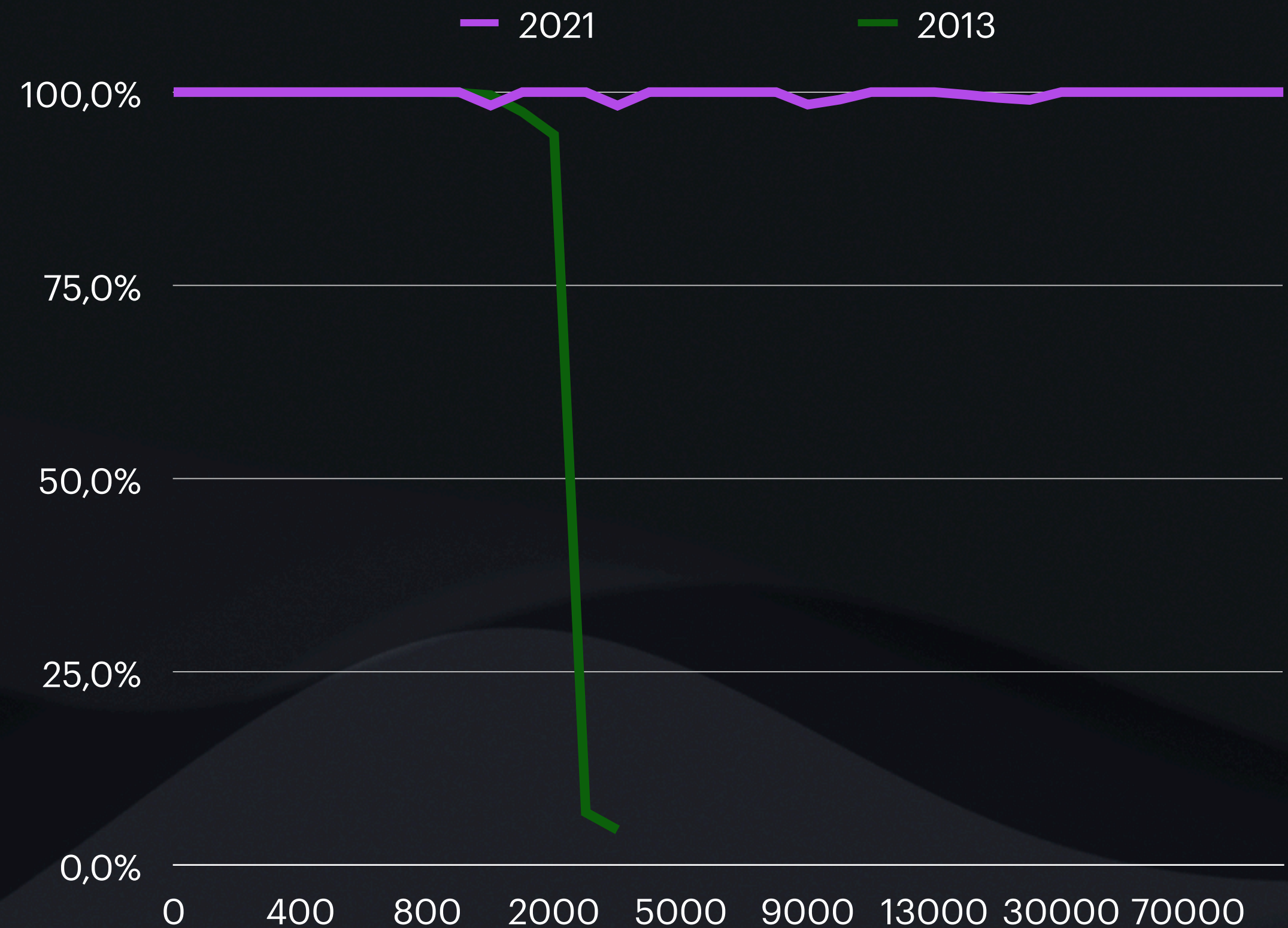
swift?

Technologies matter!

Performance

- use more modern computers, this one is from 2013!
- Newer CPU → more performance → less hardware
- Intel/AMD → ARM

Newer hardware (2021) - java



➔ concurrent requests

Conclusion

- use appropriate tech
 - different language: 20% less power
 - adding servers?
 - or a different tech stack?
- If your idle server runs fans full blast → slow down



Acknowledgements

- full Docker container code at : <https://gitlab.com/axello/serverbench>
- java benchmark: Gerard de Leeuw (ColoClue)
- php help: Jelle Luteijn (ColoClue)
- <https://tech.phlux.us/Juice-Sucking-Servers/> (#1, #2, #3)



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