

Greener Observability: A Journey Toward Sustainable Monitoring Through Open Source Innovation



Cloud Native Sustainability Month 2025 - Barcelona Edition



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VictoriaMetrics

Simple, Reliable, Efficient Monitoring

victoriametrics.com



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Cloud Native Days Romania organizer

Co-lead CNCF Merge-Forward Neurodiversity



A dark rectangular card featuring a circular profile picture of a woman with short brown hair, identified as Diana Todea. Below the picture, her name is printed in white. Underneath her name, there is a small green icon followed by the text "DX@VictoriaMetrics | Observability SME | OpenTelemetry docs localizatio...". To the right of the card is a large QR code.

https://github.com/didiViking/Conferences_Talks

Agenda

✓ Why Sustainability Matters in Observability?

✓ VictoriaMetrics' Sustainable Mission

✓ Building Green Software from the Inside Out

✓ Product Efficiency = Lower Emissions

✓ Empower Users for Greener Operations

The Cost of Observability is huge

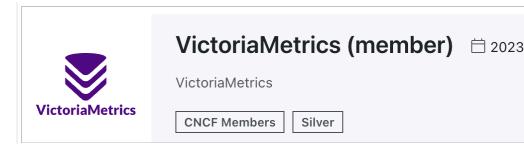
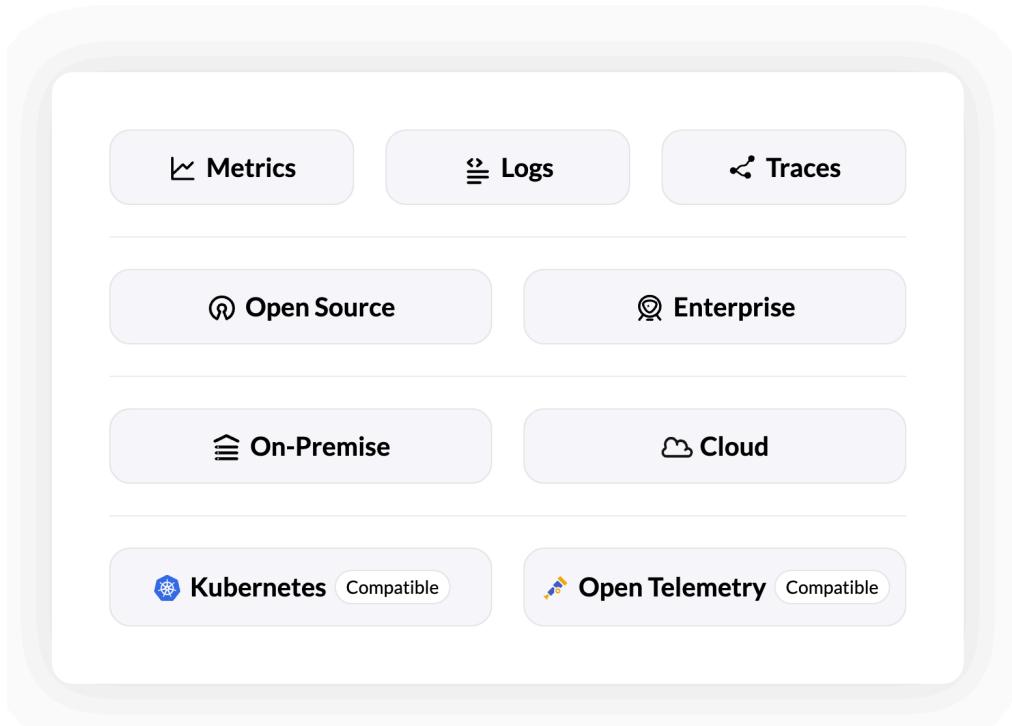
-  Observability budgets commonly sit around ~15–25% of an infra bill
-  Cloud logging/storage costs are explicit and can be tens of cents per GiB
-  Adding AI / LLMs increases telemetry significantly

Why Sustainability matters in Observability?



More telemetry = more servers = more energy = more carbon footprint

VictoriaMetrics Observability Stack



VictoriaMetrics Sustainable Mission

Preventing Code Bloat

Green Coding Practices

Careful Use of External Libraries

Observability and Profiling

Policy & Internal
Controls

Language Choice

VictoriaMetrics Sustainable Features

1.7x

less memory

90%

energy cost
reduction

2.5x

less disk space

10x

infrastructure
cost Savings

16x

faster query
latency

4x

network cost
Savings



Benchmarks

Energy Savings

Hardware reduction



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Find your “most bloated” metrics in Cardinality Explorer

The screenshot shows the VictoriaMetrics VMUI interface with the "Cardinality Explorer" feature highlighted. The top navigation bar includes "Query", "Raw Query", "Explore", "Tools", "Dashboards", and "Alerting". The main search bar has "Time series selector", "Explore Prometheus Metrics", "Focus label", and "Limit entries (10)". Below the search bar, there are two sections: "Metric names with the highest number of series" and "Labels with the highest number of series".

Metric names with the highest number of series:

Metric name	Number of series	Requests count	Last request	1d	1d %	Share in total
apiserver_request_duration_seconds_bucket	14,232	358,661,179	5 days ago	↑ 264	↑ 1.89%	5.03% ↑ 1.00%
github_downloads_total	11,745	16,583,853	5 days ago	0	0.00%	4.15% ↓ 0.92%
flag	10,462	4,955,316	4 days ago	↑ 2,815	↑ 36.81%	3.70% ↑ 0.40%
etcd_request_duration_seconds_bucket	9,576	633,128	5 days ago	↑ 96	↑ 1.01%	3.38% ↓ 0.71%
apiserver_request_sil_duration_seconds_bucket	9,328	2,519,663	5 days ago	↑ 198	↑ 2.17%	3.29% ↓ 0.64%
apiserver_request_body_size_bytes_bucket	4,704	239,933	5 days ago	↑ 160	↑ 3.52%	1.66% ↓ 0.30%
container_memory_failures_total	4,312	7,134,072	5 days ago	↑ 1,196	↑ 38.38%	1.52% ↑ 0.18%
storage_operation_duration_seconds_bucket	3,854	139,687	5 days ago	↑ 560	↑ 18.10%	1.29% ↓ 0.04%
go_gc_pauses_seconds_bucket	2,631	314,562	5 days ago	0	0.00%	0.93% ↑ 0.93%
go_sched_latencies_seconds_bucket	2,631	271,627,091	4 days ago	0	0.00%	0.93% ↑ 0.93%

Labels with the highest number of series:

Label name	Number of series	1d	1d %	Share in total
__name__	283,121	↑ 51,293	↑ 22.13%	100.00% 0.00%
job	282,534	↑ 51,155	↑ 22.11%	99.79% ↓ 0.01%
cluster	282,530	↑ 51,155	↑ 22.11%	99.79% ↓ 0.01%
prometheus	282,530	↑ 51,155	↑ 22.11%	99.79% ↓ 0.01%
instance	270,391	↑ 51,150	↑ 23.33%	95.50% ↑ 0.93%
namespace	250,192	↑ 45,302	↑ 22.11%	88.37% ↓ 0.01%
endpoint	191,523	↑ 28,200	↑ 17.27%	67.65% ↓ 2.80%
	179,110	↑ 27,117	↑ 17.84%	63.26% ↓ 2.30%

VictoriaLogs Sustainable Features

1000x

boosts haystack
search speed

30x

less RAM

15x

less disk
space



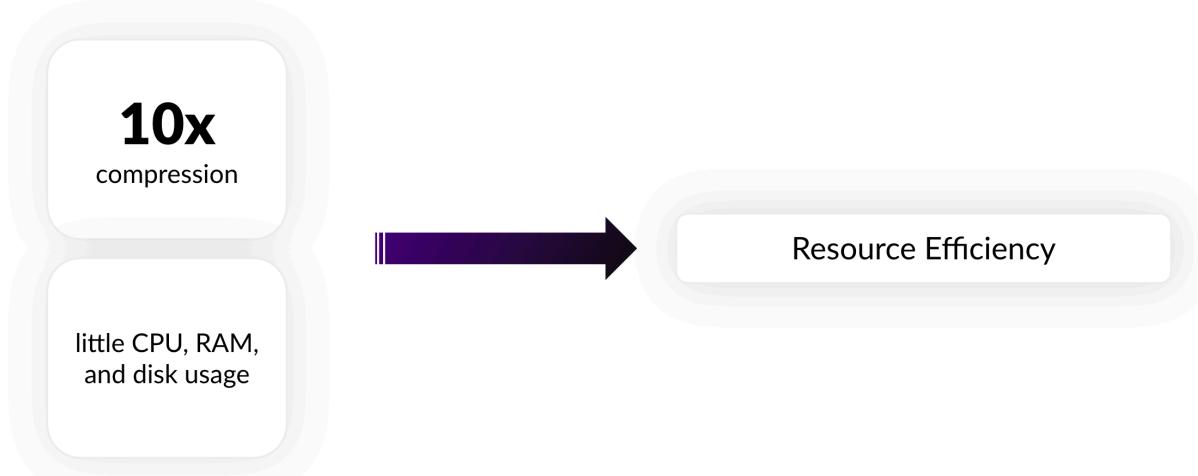
Benchmarks

Improved Query Performance

Resource Efficiency



VictoriaTraces Sustainable Features



Build Green Software from the Inside Out



<https://greensoftware.foundation/manifesto>

MINIMISE CARBON

The Foundation's mission is to reduce the total change in global carbon emissions associated with software. When evaluating choices we choose the option that advocates for abatement (reducing emissions) not neutralisation (offsetting emissions).

Operationalise:

- We will consider how to minimise carbon emissions in every decision we make around how we conduct ourselves operationally and the standards and technology we create and use.

Recommendations to Reduce Footprint



Empower Users for Greener Operations



Exploring best practices for a greener Kubernetes

Chainguard · AT&T



[https://2025.cloudnativebergen.dev/
speaker/marta-paciorkowska](https://2025.cloudnativebergen.dev/speaker/marta-paciorkowska)



9 Rs ->5Rs for Kubernetes waste management



Refuse -> Reduce -> Repair -> Resize -> Reschedule -> (Repeat)

Take-aways

- 🌱 Observability companies should start applying Green Software Foundation's actions since day 1 🌱
- 🌱 Sustainability is spread through company culture 🌱
- 🌱 But ultimately, we are all responsible to maintain it 🌱
- 🌱 Homework: talk about a green project with your co-workers and start implementing it! 🌱

Resources



Sustainability at VictoriaMetrics



<https://greensoftware.foundation/articles/what-is-green-software>

<https://github.com/cncf/tag-env-sustainability>

<https://github.com/VictoriaMetrics/prometheus-benchmark>

<https://docs.victoriametrics.com/victorialogs/#benchmarks>

<https://victoriametrics.com/blog/dev-note-distributed-tracing-with-victorialogs/>

<https://play.victoriametrics.com/>

<https://docs.victoriametrics.com/>



Explore VictoriaMetrics Solutions



VictoriaMetrics

Open Source Available on Github



VictoriaTraces

Open Source Available on Github



VictoriaLogs

Open Source Available on Github



Muchas gracias!

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VictoriaMetrics Community