



Infrastructure optimization audit

This audit converts the observed situation into a clear decision: downsize, keep, upscale or reuse.

CONTROLLED VALIDATION REQUIRED

Controlled validation required

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Conservative business priority

Business proof : The audit turns technical metrics into avoidable spend, recoverable capacity and a decision trajectory for where to pay, consolidate or wait. Estimated recoverable capacity: about 4 additional light workload(s) without immediate purchase (example-vm-001: up to 4).

Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.

InfraWatts decision

Controlled validation required — Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Hosts already exploitable: example-vm-001. Hosts with partial reading: none. Hosts still exploratory: none.

Complete memory history; memory projection usable. ; no strong memory pressure detected.

REFERENCE	AUDIT-20261012-10BC5399
ENVIRONMENT	example-vm-001
DETECTED PERIOD	Automatically detected period : Last 168h, equivalent to 168.0 hours of usable data.
MATURITY	consolidated / confidence high
READOUT	Last 168h
DECISION	7d
STRATEGY	14d
GENERATION	12/10/2026 20:59
VERSION	1.0.0
SERVICES	1

CAPACITY & ENERGY SCORE	TARGET CAPACITY & ENERGY SCORE	BUSINESS IMPACT	CARBON IMPACT
72/100 Usage efficiency, not operational health	44/100 After the recommended scenario	\$0.0/month Conservative business priority	0.00 kg CO2eq/year Neutral

Decision summary

Infrastructure	Moderate
CPU idle	78.0%
Decision	PREPARE
Action	Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.
Risk	Moderate (isolated spikes)
Actual observation level	CONSOLIDÉ

The technical simulation adjusts risk level and execution conditions; the global decision remains the primary reference.

Business proof

The audit turns technical metrics into avoidable spend, recoverable capacity and a decision trajectory for where to pay, consolidate or wait.

PROJECTED INFRA ROI to qualify to qualify	RECOVERABLE CAPACITY 3.1 vCPU / 4.7 GB without immediate purchase	ADDITIONAL WORKLOADS 4 light CPU 15% + RAM headroom assumption	AVOIDED CARBON DEBT to qualify depends on selected scenario
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Executive contents

Complete report structure for management review, technical validation and operational execution.

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Decision readout

The decision comes first; technical details follow.

Summary decision table

Workload overview before detailed explanations.

Workload / server	Decision	Risk	Confidence	Cost impact	CO ₂ impact	Recommended action
example-vm-001	PREPARE	MODERATE	NOT AVAILABLE	not available	134.4 gCO2e	Confirm workload, maintenance window, target pricing, backup and rollback.

1. Decision

Controlled validation required

Controlled validation required

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

2. Why

Business readout	Conservative business priority
Confidence	high
Confidence gate	Complete memory history; memory projection usable. ; no strong memory pressure detected.
Decision type	InfraWatts decision

3. Business impact

Conservative business priority

Neutral

\$0.0/month / \$0.0/year

3 bis. Why pay

The audit turns technical metrics into avoidable spend, recoverable capacity and a decision trajectory for where to pay, consolidate or wait.

Evidence	Readout	What this changes
Projected infra ROI	to qualify	annualized avoidable budget versus observed cost
Recoverable capacity	3.1 vCPU / 4.7 GB	already paid resource that can absorb new demand
Possible additional workloads	4 light workload(s)	growth potential before a new server/cloud purchase

Evidence	Readout	What this changes
Possible consolidation	1 small VM equivalent(s)	candidates to group or delay in provisioning
Future avoided cost	to qualify	avoidable run-rate if the recommendation is applied
Avoided saturation	78.0% min CPU headroom	reserve capacity before adding load
Monthly trajectory	to qualify	cumulative value visible month by month
Avoided carbon debt	to qualify	depends on selected scenario
Runtime density benchmark	1.2 runtime/vCPU (standard)	shows whether the infrastructure carries few or many services per vCPU
Avoided carbon debt	to be qualified	depends on selected scenario

4. Carbon impact

0.00 kg CO2eq/year

Neutral

Environmental view: a sparse workload unnecessarily spreads energy use and lifecycle CO2 over little useful work.

5. Confidence level

Confidence level: high

consolidated

Complete memory history; memory projection usable. ; no strong memory pressure detected.

Observed window: 168.0 h. The duration covers enough cycles to support an actionable decision, while still keeping post-change validation as an operational safeguard.

6. Recommended actions

CONTROLLED VALIDATION REQUIRED

Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.

Prepare

Prerequisites :

Complete memory history; memory projection usable. ; no strong memory pressure detected.

7. Technical details

The efficiency score (72/100) is primarily penalized by sustained CPU under-utilization (22.0% average load, leaving 78.0% idle capacity). Simplified reading: CPU 35%, RAM 20%, runtime density 15%, stability 15% and operational safety 15%. Observed runtime density (1.0 component(s) per host on average) plays a secondary role: the main penalty comes from allocated capacity remaining well above useful workload.

Cost position should be monitored: the observed signal is not yet robust enough to conclude on an actionable optimization.

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Executive advisory summary

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Decision breakdown

Global decision: Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Complete memory history; memory projection usable. ; no strong memory pressure detected.

Why this is not an automatic GO

Positive signal : Positive signal: average CPU 22.0% and average RAM 41.0%; the host appears structurally underused.

Actual blocker : Blocker: no significant peak is established (p95 42.0%, p99 62.0%, max 91.0%), but application prerequisites, maintenance window and rollback need validation. Complete memory history supports a memory projection.

Likely cause : Peaks appear linked to application runtime bursts. Observed workloads: api.

Why this is not GO : This is not automatic GO because business and operational gates remain open despite a technically favorable simulation.

Why this is not NO_GO : This is not NO_GO because average and/or p95 remain contained and available signals do not prove irreversible sustained saturation.

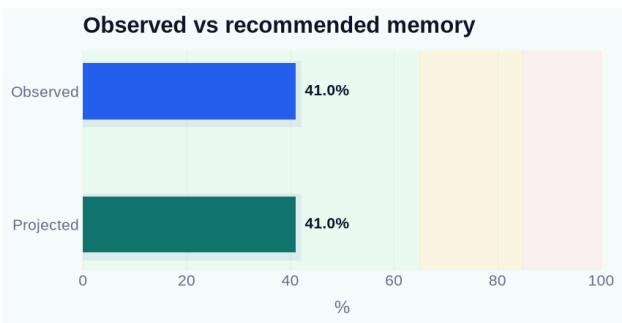
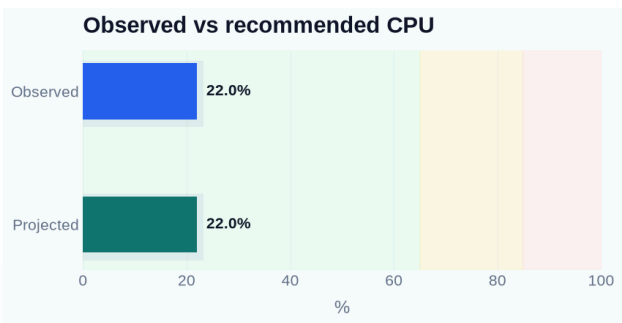
Actions : Identify the containers/processes responsible for peaks. Check whether peaks match cron, Celery, backup, batch, CI/CD or maintenance. Prepare snapshot/backup. Execute outside critical hours. Monitor p95/p99 for 24 to 72h. Rollback if p95/p99 exceed validated thresholds.

Business / FinOps / GreenOps readout

Economic decision : Economic KEEP: keep current configuration — Keep the current configuration. No net cloud saving is demonstrated. Peak diagnostics are required before any action.

FinOps : No cloud saving is demonstrated.

Host	Per-host decision	Confidence	Actionability	Detail
example-vm-001	Controlled validation required	high	supervised	Prepare the optimization, validate peaks and execute only with rollback ready.

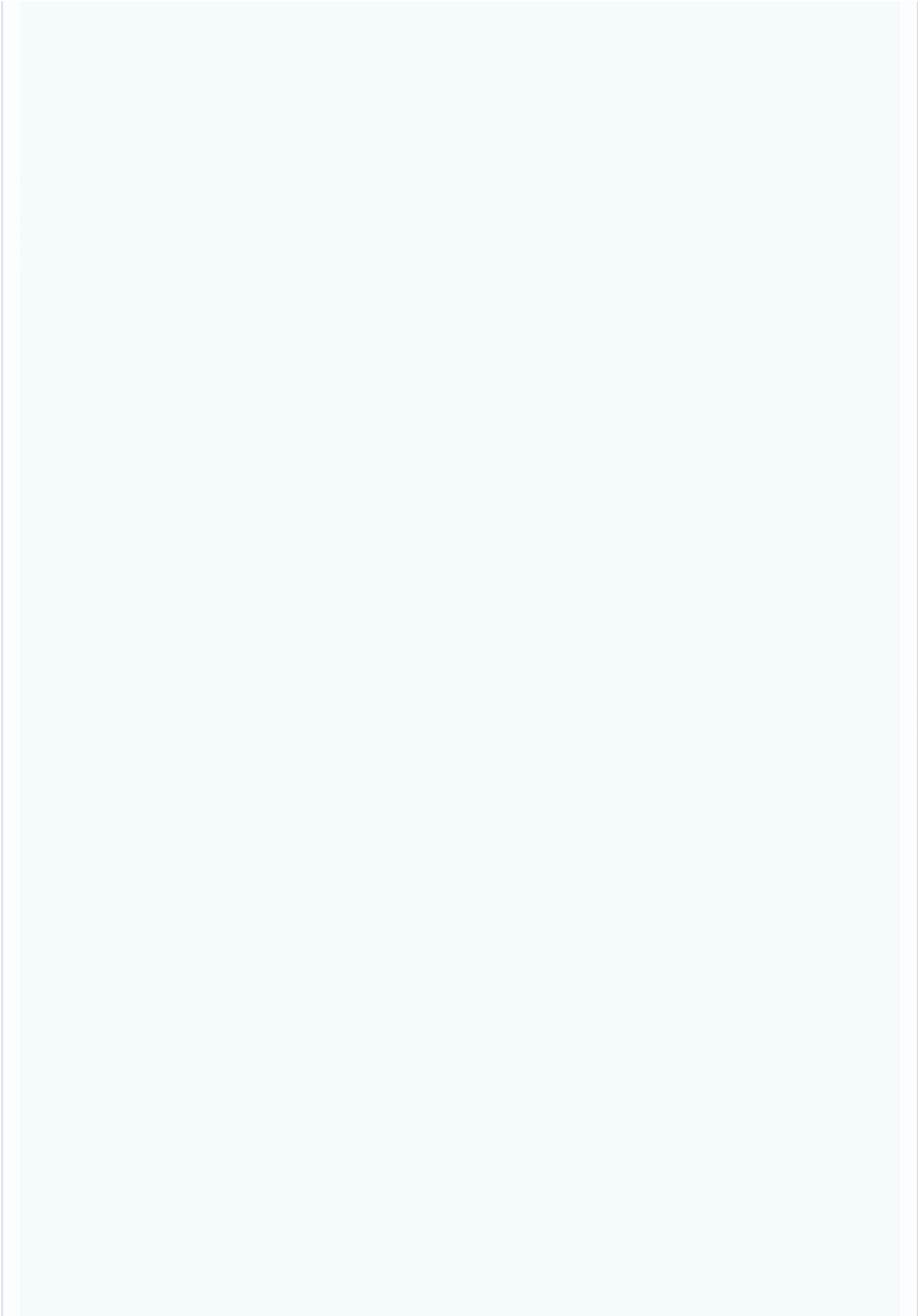




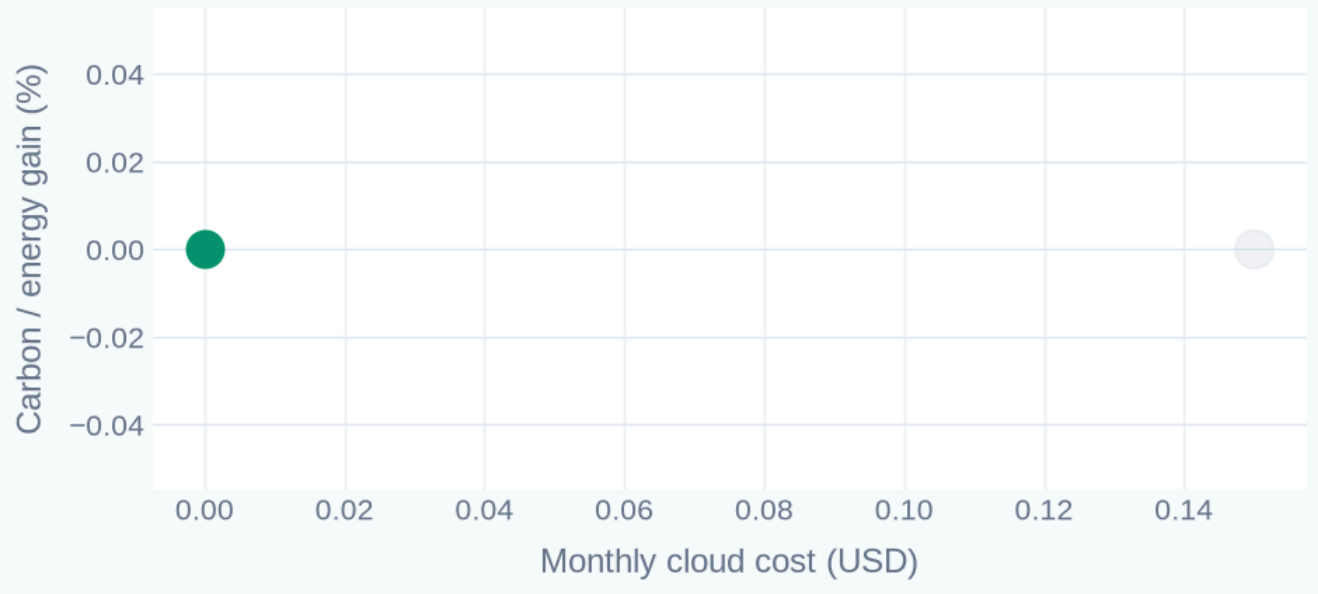
Recommended



0.0 USD/month



Cost vs carbon trade-off



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Key metrics

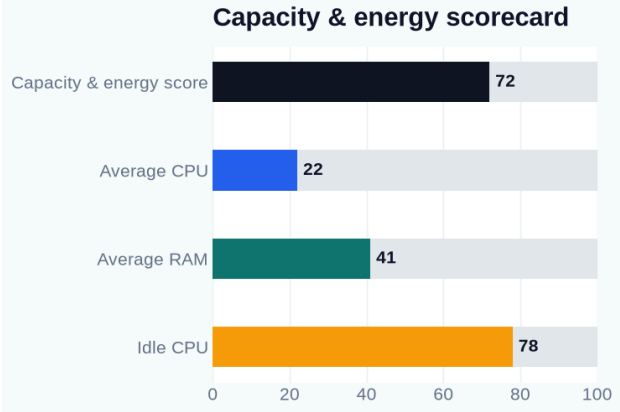
Consolidated indicators for CTOs, CFOs and operations teams.

ANNUALIZED ENERGY 137.7 kWh	ANNUALIZED COST 584.0	ANNUALIZED CO ₂ 7.01 kg	CPU IDLE 78.0%
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FinOps readout

Observed current cost	-
Estimated target cost	-
Net monthly impact	0.0 USD/month
Net annual impact	0.0 USD/year
Optimization ROI	Depends on migration plan
Potential FinOps savings	Separate cost reading

Capacity & energy scorecard



Positioning

Your infrastructure is below comparable environments (+9 points). The main driver is CPU underutilization (78.0% idle).

This score measures capacity/energy efficiency, not operational health.

Direct readout : 78.0% of CPU capacity is unused during the observed period.

Monthly trajectory

Horizon	Cumulative avoided cost	Avoided carbon debt	Readout
M+1	to qualify	to qualify	cumulative value if action starts now
M+3	to qualify	to qualify	cumulative value if action starts now
M+6	to qualify	to qualify	cumulative value if action starts now
M+12	to qualify	to qualify	cumulative value if action starts now

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Detailed recommendation

Clear explanation of the recommendation, its driver and its cost/carbon trade-off.

BALANCED

OBSERVE

example-vm-001

RECOMMENDED DECISION	ACTION CATEGORY	RECOMMENDATION TYPE	DECISION TYPE	COST IMPACT	CO ₂ IMPACT
Controlled validation required	Prepare	☐ Cost optimization	InfraWatts decision	\$0.0/month	0.00 kg CO2eq/year

Recommendation readout

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Why : Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Useful action : Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.

Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.

consolidated — 168.0 h

consolidated

Cost position should be monitored: the observed signal is not yet robust enough to conclude on an actionable optimization.

This recommendation is based on observed usage, independently from the current provider.

Observed capacity AWS t3.large toward target 2 vCPU / 8-16 GB RAM.

Why this recommendation?

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Same decision rule as the decision audit.

Prepare technical validation, FinOps/GreenOps arbitration, maintenance window, backup and rollback.

Why this recommendation

Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

Decision readout

Action category	Prepare
Recommendation type	☐ Cost optimization
Decision type	InfraWatts decision
Recommendation engine	balanced
Target	2 vCPU / 8-16 GB RAM
Capacity & energy score	44/100 — not a health score
Maturity level	consolidated
Confidence level	Confidence level: high
Risk	Low

Why this recommendation

Non-additive summary: displayed values are per-probe maxima, not a sum across probes.

Estimated impact			
MONTHLY IMPACT \$0.0/month	ANNUAL IMPACT \$0.0/year	AVOIDED CO ₂ 0.00 kg CO2eq/month	RISK Low

Readout	Detail
Statut	Controlled validation required
Action	Prepare
Raison	Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.
Contrôle	Complete memory history; memory projection usable. ; no strong memory pressure detected.
Observed versus projected load	Non-additive summary: displayed values are per-probe maxima, not a sum across probes.
Observed / projected gap readout	Non-additive summary: displayed values are per-probe maxima, not a sum across probes.
Confidence	Complete memory history; memory projection usable. ; no strong memory pressure detected.

Why this confidence level	
Confidence	consolidated
Confidence	Complete memory history; memory projection usable. ; no strong memory pressure detected.
Confidence	Non-additive summary: displayed values are per-probe maxima, not a sum across probes.

CURRENT COST -	TARGET COST -	MONTHLY IMPACT 0.0 USD/month	ANNUAL IMPACT 0.0 USD/year
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05

Infrastructure context & cloud FinOps

Current operational view and impacts by provider.

Probe	Hostname	OS	Cores	RAM	Disk	Provider	Instance	Region
example-vm-001	example-vm-001	Ubuntu 24.04 LTS	4	8.0	120.0	AWS	t3.large	eu-west-3

Hosting context / Cloud FinOps impact

Host	Current	Target	Monthly impact	Annual impact	Readout
example-vm-001 AWS Cloud public managé	AWS t3.large -	2 vCPU / 8-16 GB RAM -	0.0 USD/month	0.0 USD/year	COST OPTIMIZATION Monitoring first: do not execute automatically. Neutral

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Architecture & utilization

Current versus target architecture and actual load during the assessed period.

Host	Current architecture	Recommended architecture	Analysis
example-vm-001 AWS Docker	Current instance: t3.large Runtime: Docker Key components: api, worker, gunicorn, redis 4 observed components / 4 auditable Estimated role: Cache / queue	Target: 2 vCPU / 8-16 GB RAM Same application runtime with an adjusted infrastructure envelope.	Targeted rightsizing trade-off to validate across cost, carbon and safety.



Explanatory patterns

No sufficiently attributable peak pattern was detected in the available data.

Pattern	Expected signal	Status
pics corrélés à backup	backup / rsync / borg / restic	not observed
Celery burst	celery worker / beat	not observed
cron	cron / tâche planifiée	not observed
vacuum postgres	postgres / vacuum / pg_dump	not observed
batch analytics	analytics / ETL / batch	not observed
trafic HTTP	nginx / gunicorn / uvicorn / trafic continu	not observed
déploiement	build / release / deploy	not observed
scans bots	bot / crawler / scan sécurité	not observed

06B

Observed infrastructure view

Detected host topology and execution environments.

Automated readout

Host summary

Host	Provider	Primary runtime	Usable components	Execution type	Estimated role
example-vm-001	AWS	Docker	4	Containerized	Cache / queue

Observed mini UML diagram

```
example-vm-001 [AWS]
|-- api
|-- worker
|-- gunicorn
`-- redis
```

07

Detailed analysis

Resource analysis, operational health and optimisation opportunities.

Condensed technical table

Technical summary first; series, spikes, processes and collection limitations follow in detail.

Host / workload	Canonical CPU p95 / p99 / max	RAM average / max / completeness	Disk / network	Metric quality	Detected anomalies	Technical decision
example-vm-001	p95 0.0% / p99 0.0% / max 0.0%	avg 41.0% / max 65.0% / usable metrics	Disk 120.0 GB	USABLE METRICS	no major anomaly	PREPARE

Probe	Hostname	Energy	Usage CO ₂	Lifecycle CO ₂	Total CO ₂	CPU	Recommendati
example-vm-001	example-vm-001	2.640	88.8	45.6	134.4	22.0%	Aucune

Automated analysis & audit readout

The monitored server shows an average CPU usage of 22.0%.Estimated average power consumption is around 25.8W.The workload appears moderately loaded.Keep the current sizing with continuous monitoring.

Summary: COST OPTIMIZATION recommendation targeting 2 vCPU / 8-16 GB RAM. Why: Observe strategy with cost direction Neutral, framed as a multi-objective cost/carbon/safety decision. Risk level: Low. Confidence: élevée. This remains an optimization hypothesis to confirm over a longer window or through post-change monitoring. Estimated savings: 0.0 USD/month and 0.0 USD/year when the scenario is truly FinOps-driven. Action category: Test action. Risk must be read together with safety margin, burst tolerance and rollback options, not only with target size.

Interpretation risk : Interpretation risk: do not confuse underutilization with absence of criticality. A critical workload can consume little while remaining spike-sensitive.

MAJOR OPPORTUNITY: DENSIFICATION

Estimated recoverable capacity: about 4 additional light workload(s) without immediate purchase (example-vm-001: up to 4).

The current infrastructure can absorb additional light loads; the priority lever is progressive consolidation, not immediate capacity purchase.

1. Controlled downsizing

2. Progressive workload onboarding

3. p95/p99/RAM monitoring per probe

Consultancy readout per VM

VM	Existing	Lower-cost option	Greener option	Keep?	Possible densificati
example-vm-001 AWS CPU moyen 22.0% RAM moyenne 41.0%	t3.large -	t3.large	No clearly better green option demonstrated	Keeping the current setup remains possible only if stability matters more than optimization.	Full application: +0 Application with shared database: +0 Application with shared cache: +0

VM	Existing	Lower-cost option	Greener option	Keep?	Possible densification
					Application with shared cache + database: +0 Up to +0 full-stack apps of similar size; +0 if Redis and DB are shared.

Optimization opportunities

Action	Why	Expected impact
Targeted VM rightsizing	example-vm-001 has a cheaper option (t3.large) without changing application scope.	Reduces infrastructure cost first while preserving the operational-safety reading.

Technical readout per host

Host	Technical readout	Business impact / risk	Go / No-Go & prerequisites
example-vm-001	Controlled validation required — PREPARE — prepare, do not execute Snapshot runtime incomplet PREPARE Audit readout : Prepare the optimization, validate peaks and execute only with rollback ready. Minimum evidence : Normalized CPU p95 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU p99 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU max Unavailable (raw Unavailable, capacity 400.0 %) / RAM HIGH_CONFIDENCE Non disponible	Prepare the optimization, validate peaks and execute only with rollback ready. Risk : MODERATE	PREPARE — prepare, do not execute To resolve / prepare : Complete memory history; memory projection usable. ; no strong memory pressure detected. / Target configuration and provider pricing must be confirmed. / Workload role and business criticality must be validated before execution. Success criteria : CPU p95/p99 and RAM remain below target after the change.

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Prioritized action plan

Immediately usable roadmap structured by implementation horizon.

Short term (0-7 days)

Action	Priority	Complexity	Impact	Performance	Confidence
Apply target 2 vCPU / 8-16 GB RAM BALANCED ADJUSTMENT — EXECUTE. A signal exists, but it should be treated as monitoring: no default execution. Validate architecture compatibility (ARM vs x86), images, system dependencies and single-core performance before any migration. Confirm actual catalog cost, target region, storage, traffic and network options before budget arbitration.	Priority 1 0-7 days OBSERVE	Medium	Balanced 0 EUR/an	Very low impact, mostly a governance action.	high

Medium term (1-4 weeks)

Action	Priority	Complexity	Impact	Performance	Confidence
Rightsize toward 2 vCPU / 8-16 GB RAM Average CPU is only 22.0%, indicating sustained over-provisioning. Validate CPU peaks and memory headroom before execution.	Priority 2 1-4 weeks OPTIMAL	High	Cost 105 EUR/an	Moderate impact, to be bounded with monitoring.	High data maturity (>7 days)
Analyze consumption by container Docker is already detected: identify top CPU/RAM consumers by container (api) and consolidate low-activity containers. Analyze consumption by container;	Priority 3 Monthly follow-up OPTIMAL	Low	Balanced 61 EUR/an	Low impact if peaks are validated.	High data maturity (>7 days)

Action	Priority	Complexity	Impact	Performance	Confidence
Consolidate low-activity containers; Identify top CPU/RAM consumers by container; Define Docker CPU/memory limits where relevant.					

Long term (1-3 months)

Action	Priority	Complexity	Impact	Performance	Confidence
Schedule monthly automated audit Recurring audits convert one-shot recommendations into measurable trajectory and governance evidence. Schedule full telemetry collection until history is consolidated.	Priority 4 Monthly follow-up OPTIMAL	Low	Balanced 29 EUR/an	Very low impact, mostly a governance action.	High

Execution runbook per host

Host	Action	Execution	Monitoring / rollback
example-vm-001 PREPARE — prepare, do not execute PREPARE — prepare, do not execute	Prepare the optimization, validate peaks and execute only with rollback ready. Current : AWS / t3.large Target : -	Method : Confirm workload, maintenance window, target pricing, backup and rollback. Window : Controlled window with rollback ready Follow-up : - Expected evidence : Normalized CPU p95 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU p99 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU max Unavailable (raw Unavailable, capacity 400.0 %) / RAM HIGH_CONFIDENCE Non disponible	Alert threshold : p95/p99 or RAM > target Rollback : Sustained p95/p99 or RAM target breach Rollback action : Immediate rollback to previous configuration Success : CPU p95/p99 and RAM remain below target after the change. MODERATE

09

Simulation validation — technical Go / No-Go & checks

Simulation adjusts risk and execution controls; it never replaces the overall decision.

CONTROLLED VALIDATION REQUIRED

The technical simulation adjusts risk level and execution conditions; the global decision remains the primary reference.

Validation readout

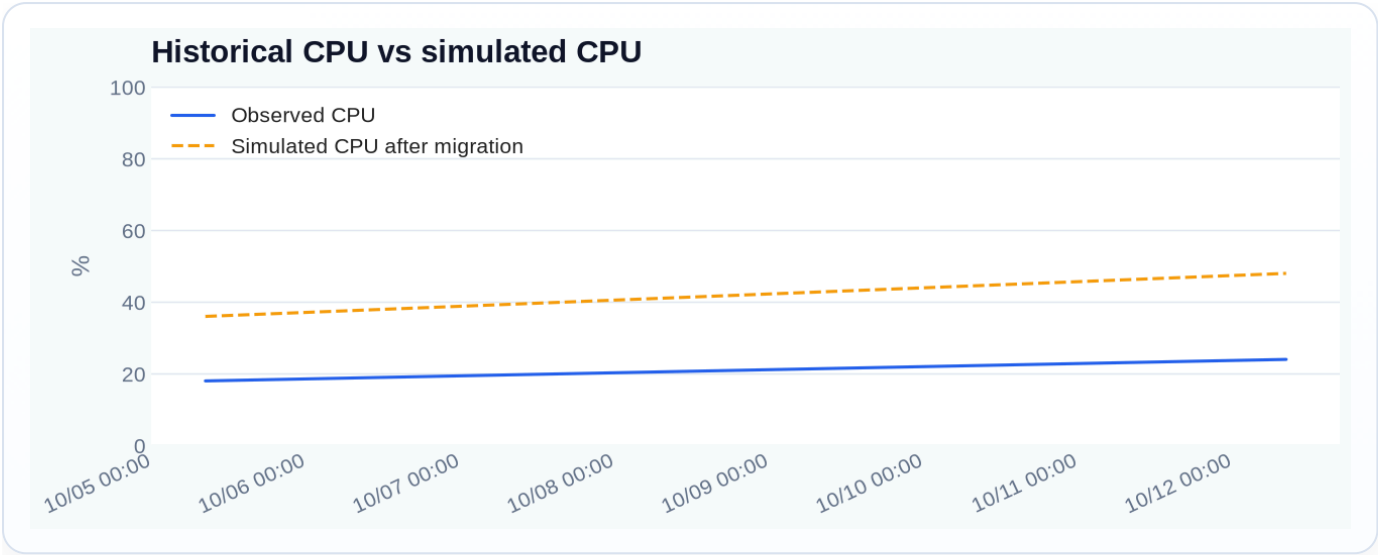
Decision rule	The technical simulation adjusts risk level and execution conditions; the global decision remains the primary reference.
Lecture simulation	Risk adjusted, decision unchanged
CPU p95	0.0% of total capacity (raw -, capacity 400%)
CPU p99	0.0% of total capacity (raw -, capacity 400%)
CPU max	0.0% of total capacity (raw -, capacity 400%)
RAM	- (INCOMPLETE)
Conclusion	Non-additive summary: displayed values are per-probe maxima, not a sum across probes.

Recommended tests

Test	Objective	Expected evidence
Rightsizing simulation	Validate target sustainability under observed peaks	Simulation unavailable
Load / staging tests	Confirm application behavior before production	Recommended over one full business cycle with documented rollback and explicit alert thresholds.
Post-change monitoring	Control CPU, memory, latency, saturation and cost drift	Reinforced monitoring for 7 to 30 days depending on criticality.
Dependencies & network validation	Confirm that database, cache, jobs, storage and network remain within safe headroom after change	Track latency, errors, disk saturation and network traffic over the validation window.
FinOps validation	Compare current cost, target cost and realized ROI	To be confirmed through invoice or billing export after change.

Explicit pre-execution checks

Host	Execution status	Evidence or explicit reason
example-vm-001	PREPARE — prepare, do not execute	Prepare the optimization, validate peaks and execute only with rollback ready. Evidence items : Normalized CPU p95 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU p99 Unavailable (raw Unavailable, capacity 400.0 %) / Normalized CPU max Unavailable (raw Unavailable, capacity 400.0 %) / RAM HIGH_CONFIDENCE Non disponible



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Container analysis

Application visibility into the main runtime consumers.

Host	Container	Image	CPU %	Memory MB	Estimated W
example-vm-001	api	example:local	27.00	420.0	10.80

WORKLOAD INTERPRETATION

api is the main observed container consumer with about 100% of estimated energy.

- Check the primary container sizing.
- Review access frequency and scheduled tasks.
- Compare CPU, RAM and energy before any global resize.
- Lower-weight containers are not priority unless business criticality says otherwise.

Final business verdict

Controlled validation required — Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

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Top energy consumers

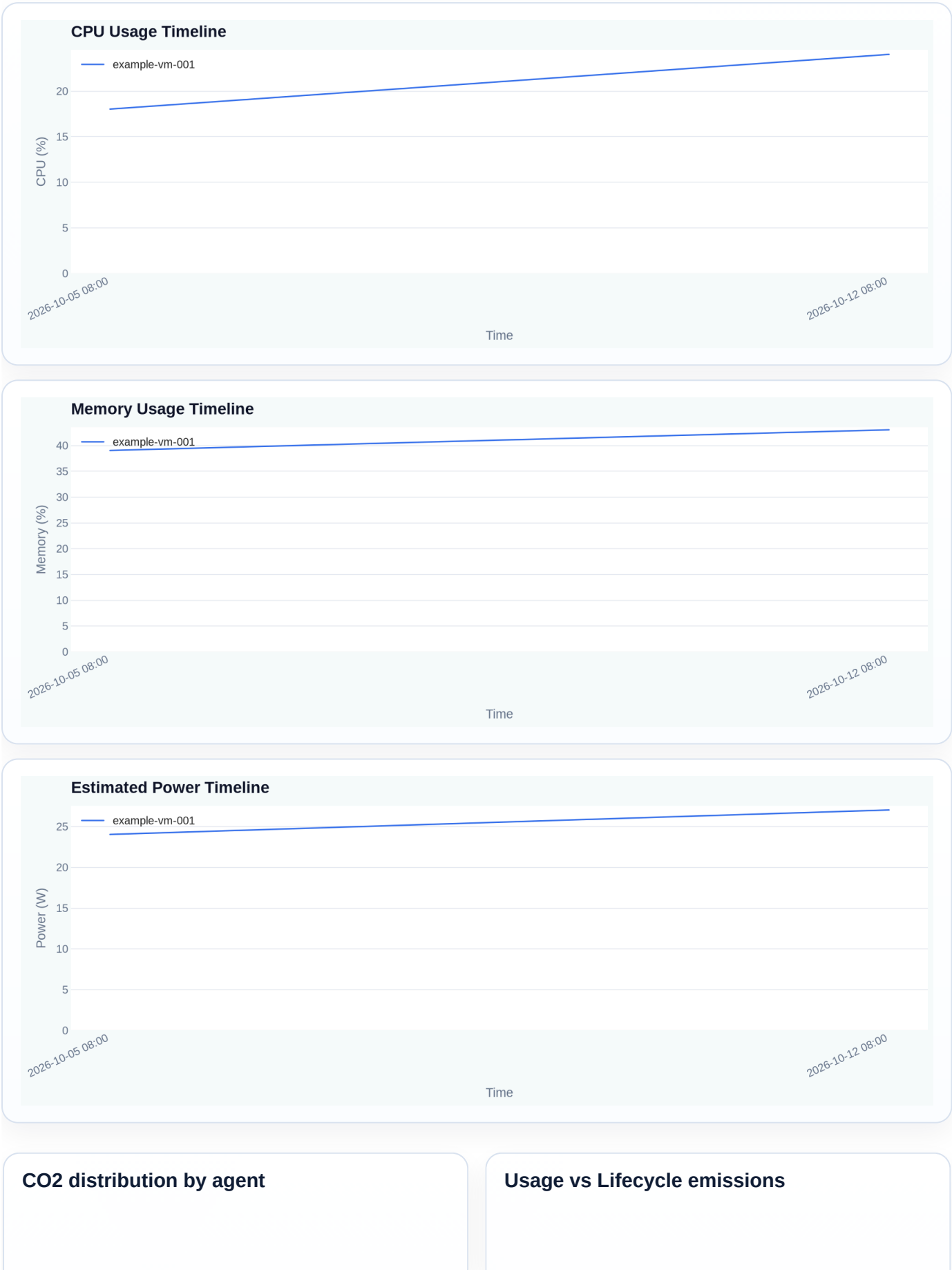
Estimated relative distribution of the main runtime components. The displayed share is not an actual absolute electricity measurement.

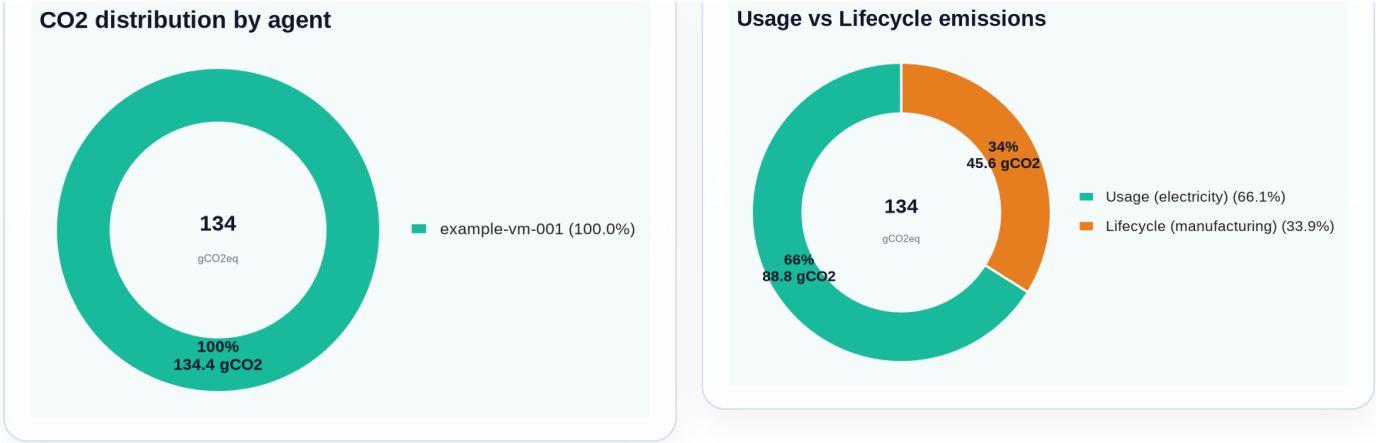
Container	Host	Relative share	Readout basis	Estimated W
api	example-vm-001	100%	estimated energy distribution	10.80

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Charts & history

Consolidated visualisations to track trends, load and impact.





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Risk analysis

Points to monitor within the execution plan.

Risk	Impact	Priority
Overprovisioned compute resources	Unnecessary cloud cost and avoidable lifecycle emissions.	High
Runtime concentration risk	A small subset of services concentrates most of the load and estimated watts.	Medium

18 Final business verdict

Final interpretation of the actual business value of the optimisation signal.

Verdict

Controlled validation required — Infrastructure is structurally underused, but peak validation, business arbitration and operational prerequisites are required.

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Methodology & data collection

Assessment methodology and validation. Traceability of assumptions, assessment model and validation procedure.

Collection framework

Confidence: N/A
Data window: 168h
Energy model: multi-factor estimation (unknown)

Energy model: deterministic multi-factor estimate based on CPU, memory, disk activity, network traffic and runtime density. CO2: split between usage and hardware lifecycle. Recommendations must be read as explicit trade-offs across cost, energy and carbon.

Observation window	168.0 h
Servers analyzed	1
Collected sources	CPU, memory, estimated power, storage, network, runtime, cloud, cost, usage CO2 and embodied CO2.
Consolidation level	Multi-agent aggregation with annualization and unit harmonization.
Computation principle	Energy model: deterministic multi-factor estimate based on CPU, memory, disk activity, network traffic and runtime density. CO2: split between usage and hardware lifecycle. Recommendations must be read as explicit trade-offs across cost, energy and carbon.

Detailed methodology

Step	Explanation
1. Measurement	Metrics actually observed during the audited period (Last 168h). CPU, RAM, estimated power, runtime and containers are used whenever available.
2. Estimation	Energy and CO2 are computed from a deterministic model. The report does not invent measurements and the LLM is not used to generate figures.
3. Decision	Recommendations separate cost, energy and carbon. A green-first option can be relevant without being presented as a cloud saving.
Confidence & limits	Current confidence level: High data maturity (>7 days). Conclusions become stronger once the observation window exceeds 7 days and includes real peak periods.

Block	Readout
Data collection	Collection through the InfraWatts agent over an observed window of 168.0 h. Host, runtime, network, estimated energy and cloud context metrics are consolidated without altering source data.
Normalization and aggregation	Multi-agent normalization, period-based annualization, aggregation of CPU/memory/energy/CO2 metrics and harmonized units for both executive and detailed report layers.

Block	Readout
Recommendation logic	Recommendation logic relies on observed CPU/memory profiles, structural under-utilization, simulated headroom and cost/carbon signals. Thresholds remain those of the existing business engine.
Simulation and projection	Before/after projections use the canonical target produced by the recommendation engine, with explicit comparison of cloud cost, estimated power and annualized CO2.
Analysis limitations	Conclusions remain directional when history is short, timeseries are incomplete or provider/catalog matching lacks confidence. Any uncertainty is surfaced explicitly.
Validation procedure	Recommended validation: staging or workload clone, reversible resize or migration test, application dependency validation, documented rollback, reinforced post-change supervision and monitoring of CPU/memory/latency/storage/network/cost peaks over at least one full cycle.

A Appendix - agent details

The appendix keeps the main report readable while retaining details per agent.

1. example-vm-001 (example-vm-001)

Metric	Value	Unit
total_energy	2.640	kwh
total_co2	134.4	grams CO2eq
cpu_avg	22.0	%
Average RAM	41.0	%
Average power	25.8	W

