

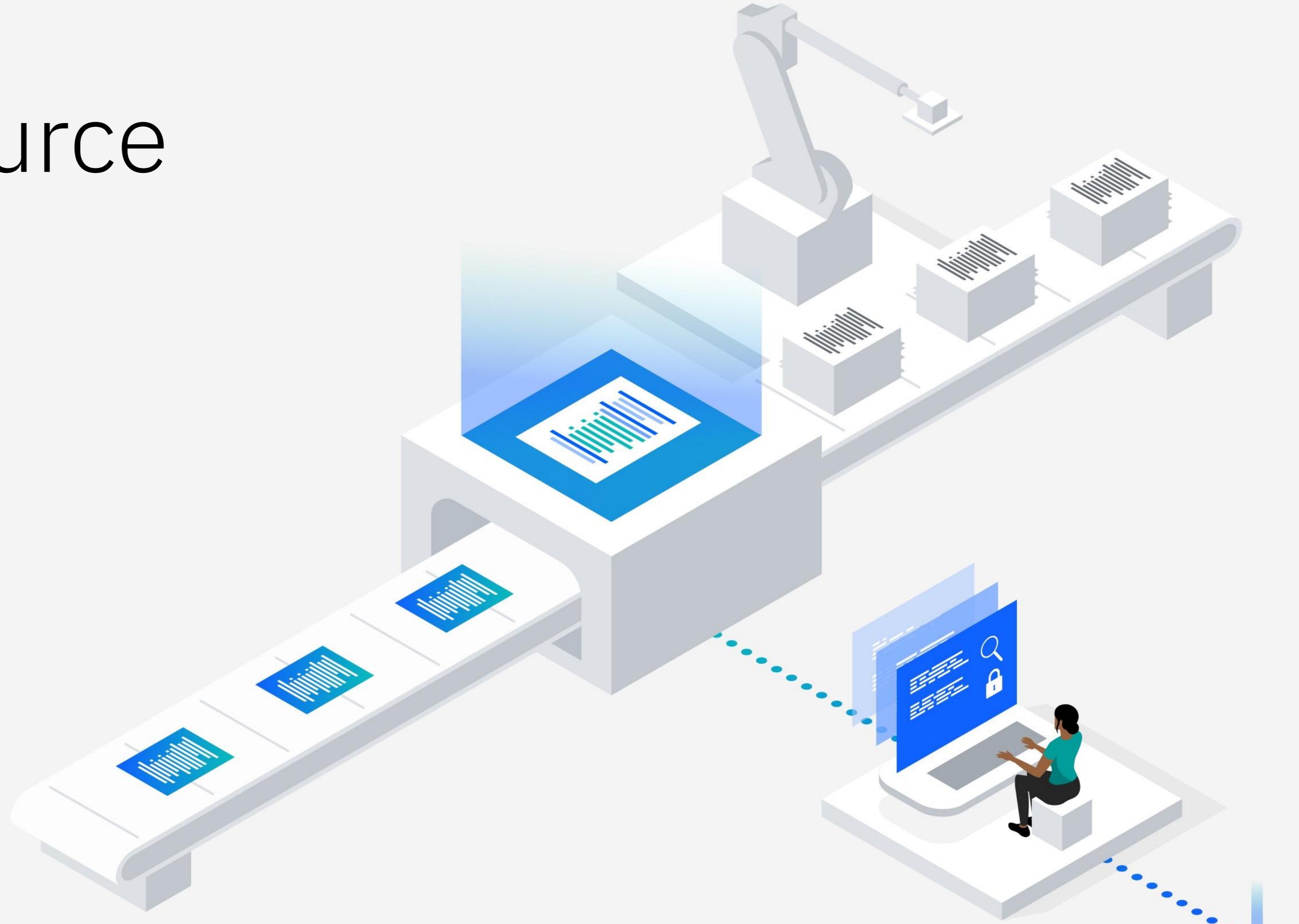
IBM Turbonomic Application Resource Management

Assure application performance—
continuously and sustainably

Wlodek Dymaczewski
Technology Enablement
dymaczewski@pl.ibm.com

Sharon Turcotte
Product Manager, IT Automation
sharon.turcotte@ibm.com

Oved Lourie
Global Field CTO
oved.lourie@ibm.com



IBM

Overallocation is an unsustainable method of mitigating risk

Performance vs. Cost

The cost is financial as well as environmental.

38%

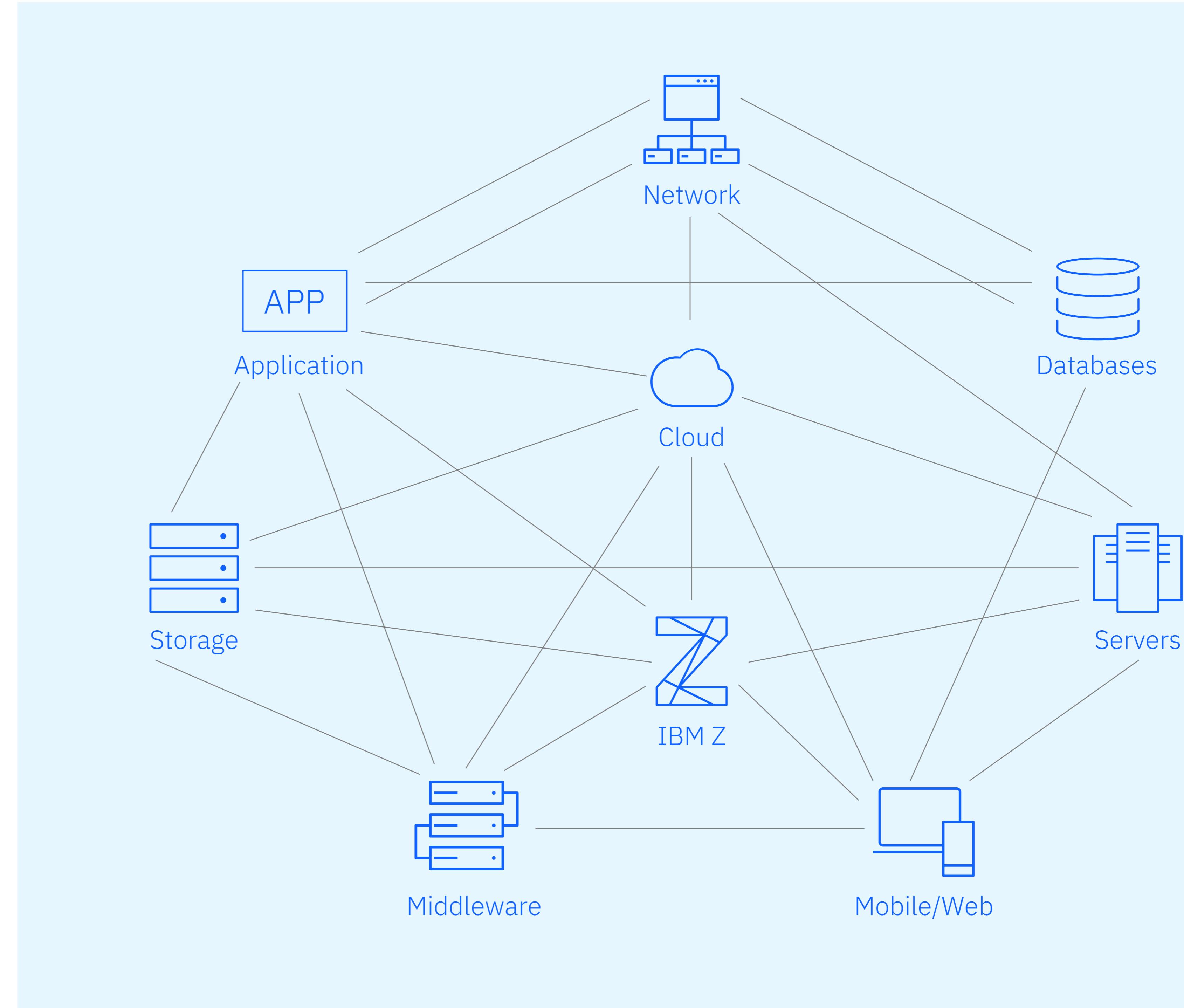
Optimizing cloud spend was cited by 38% as the top FinOps challenge when it comes to cloud operations.

20%

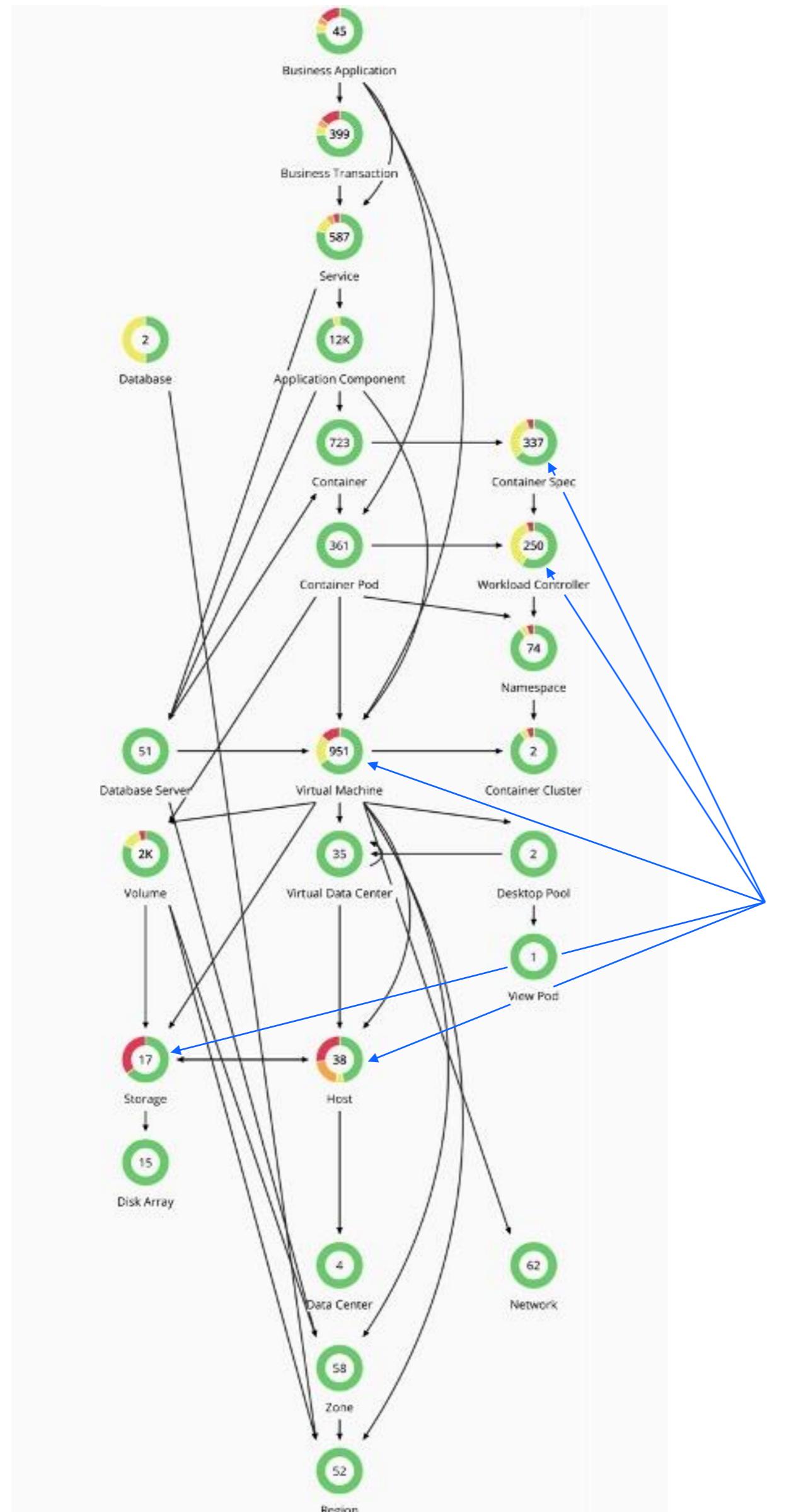
On-prem data centers typically operate at 20%—40% utilization



But the modern application is complex...

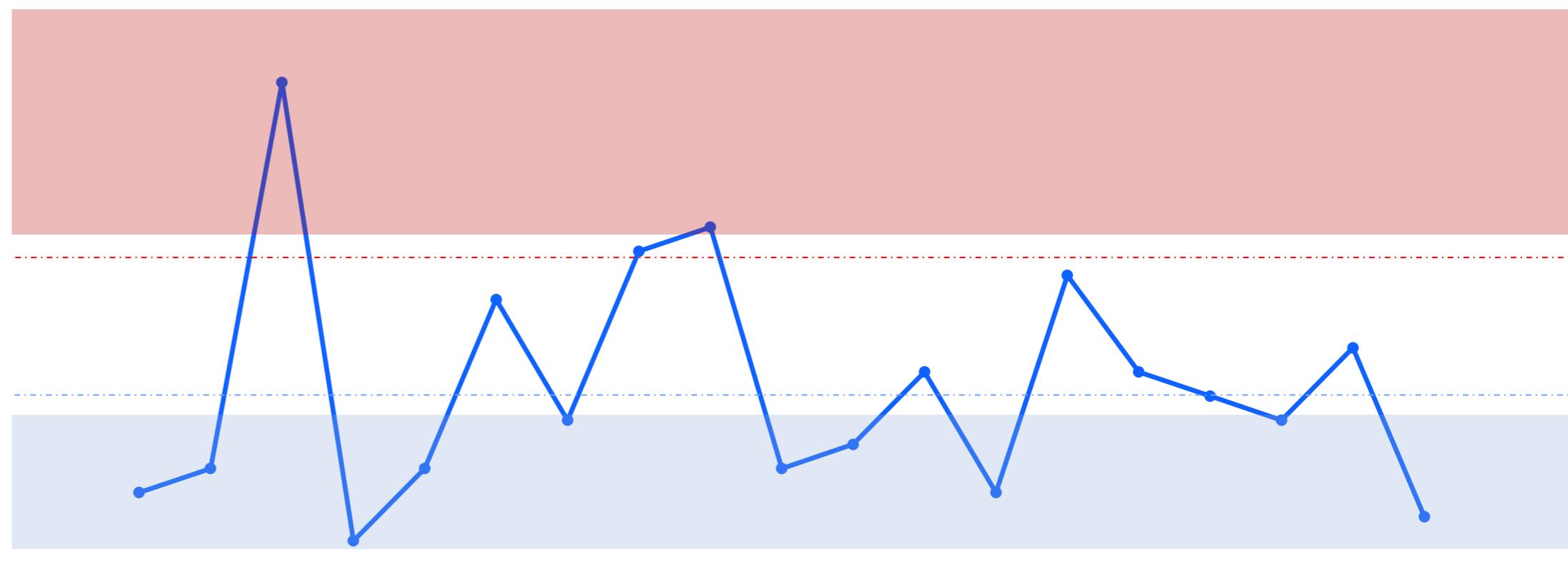


The application stack



Driven by ever changing application demand

Performance risk

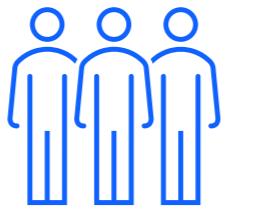


Inefficient

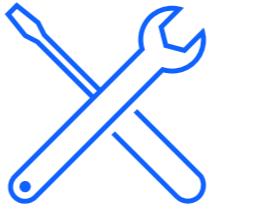
Causes
congestion
at every
layer

The result

Siloed teams



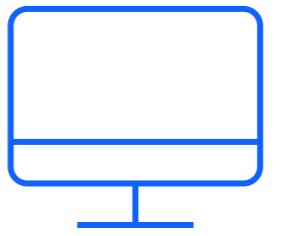
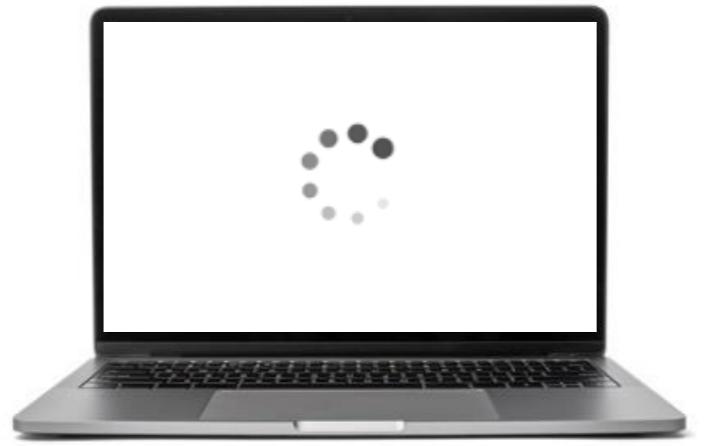
Unique tools



Different data



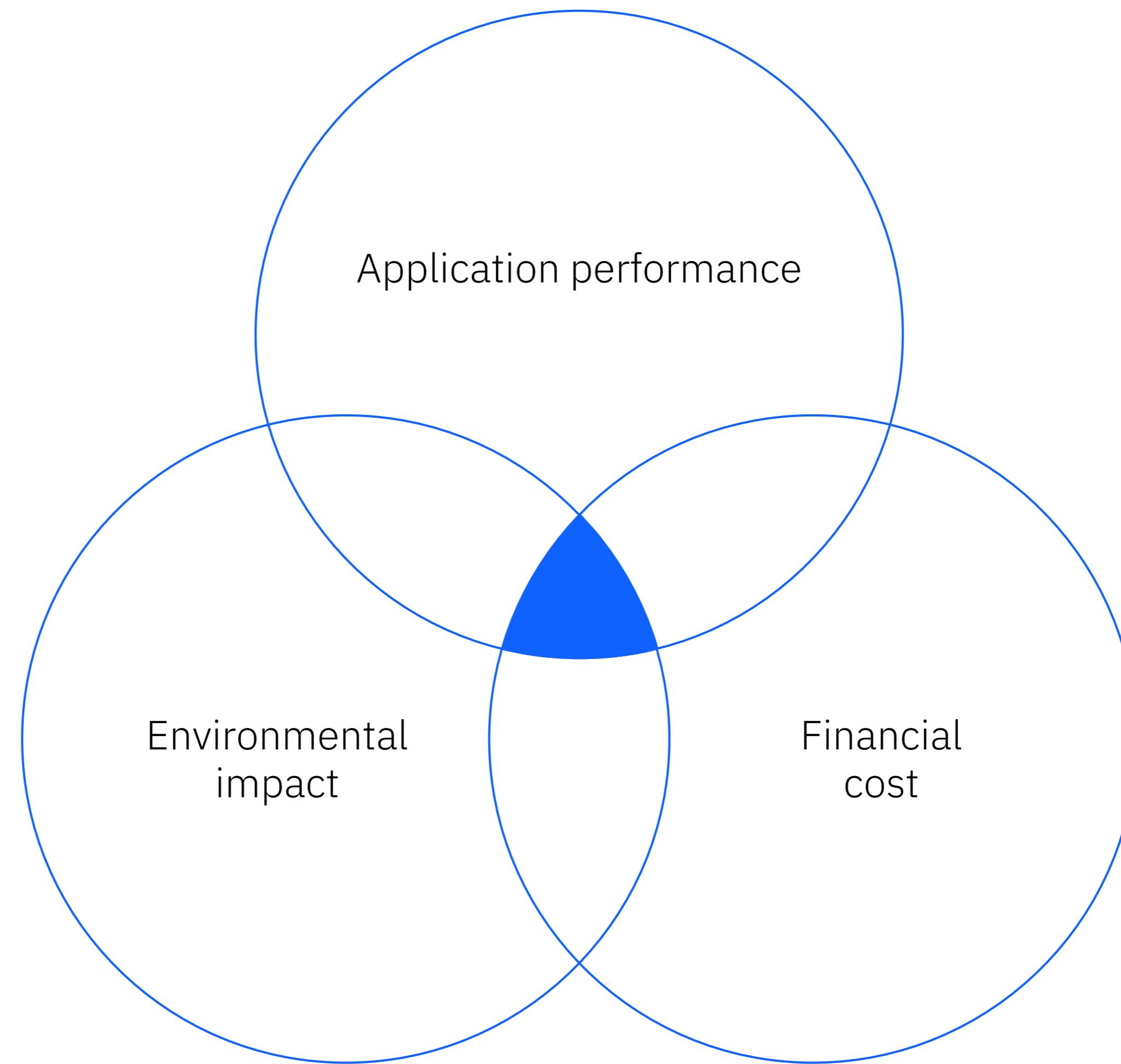
Customer experience



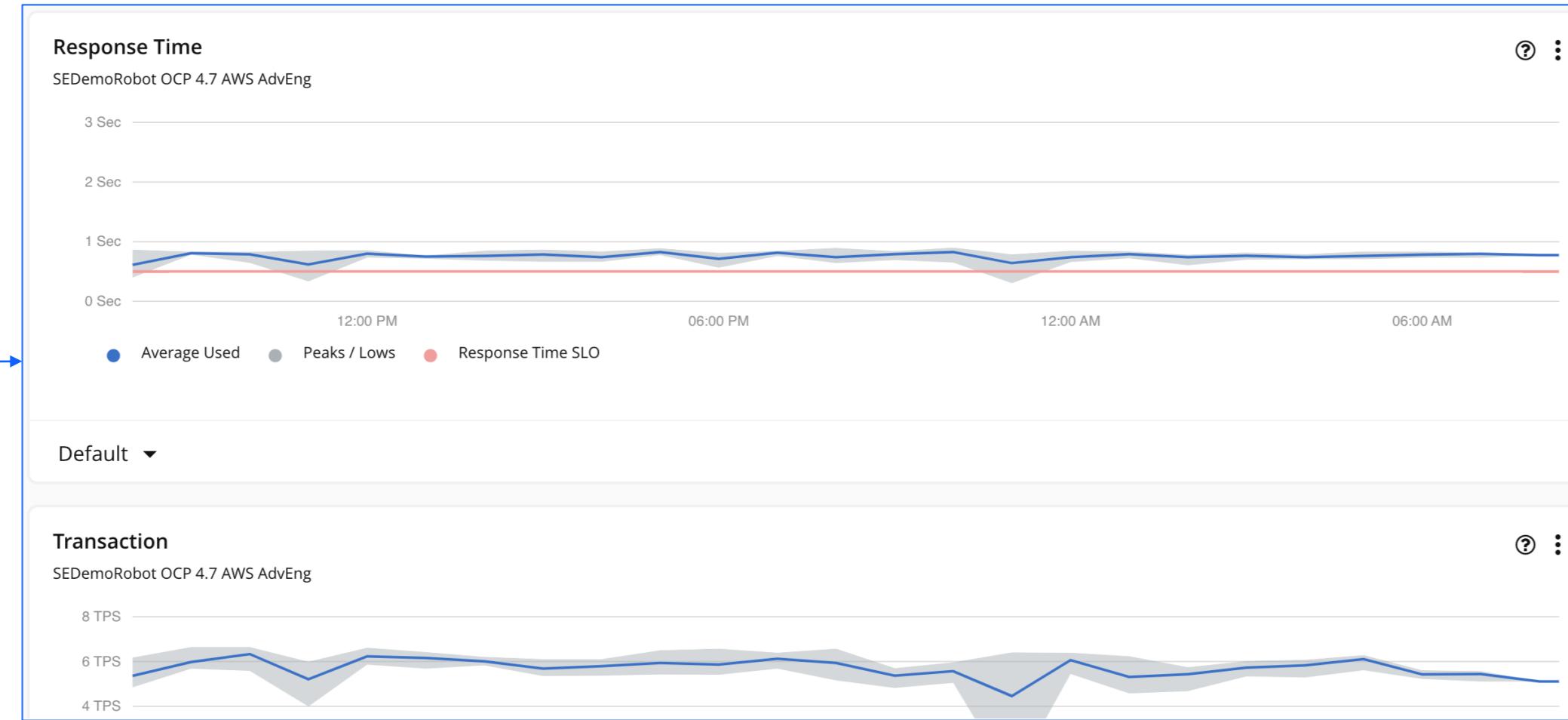
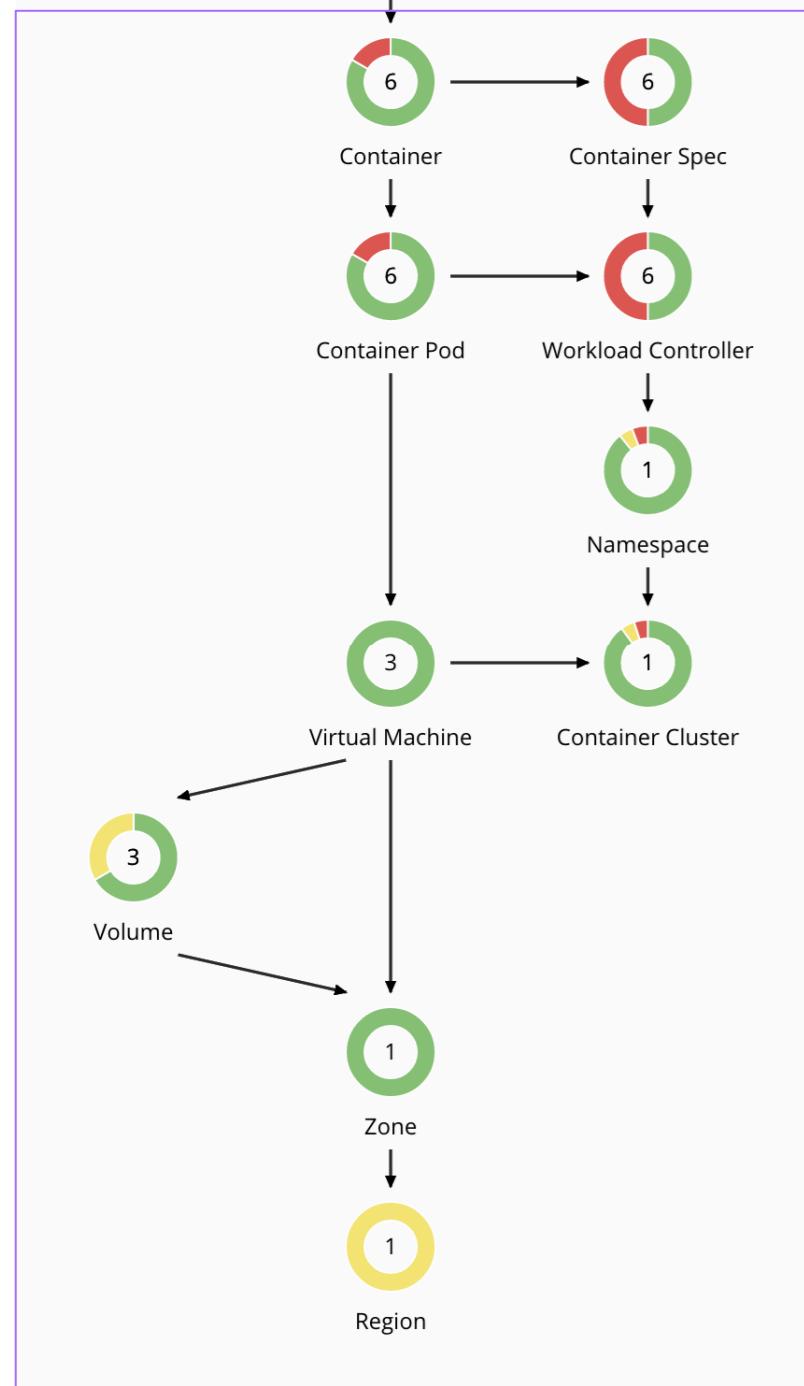
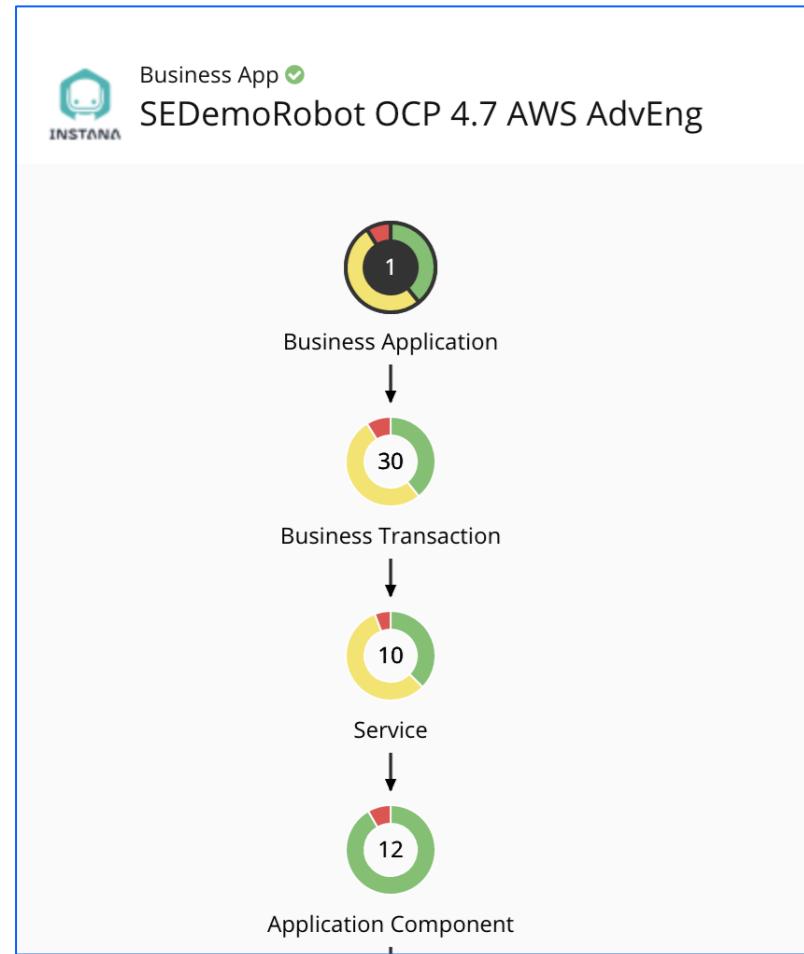
What's needed?

Meet the needs of the business without compromising the ability of future generations to meet their own needs.

Automation is a must-have.



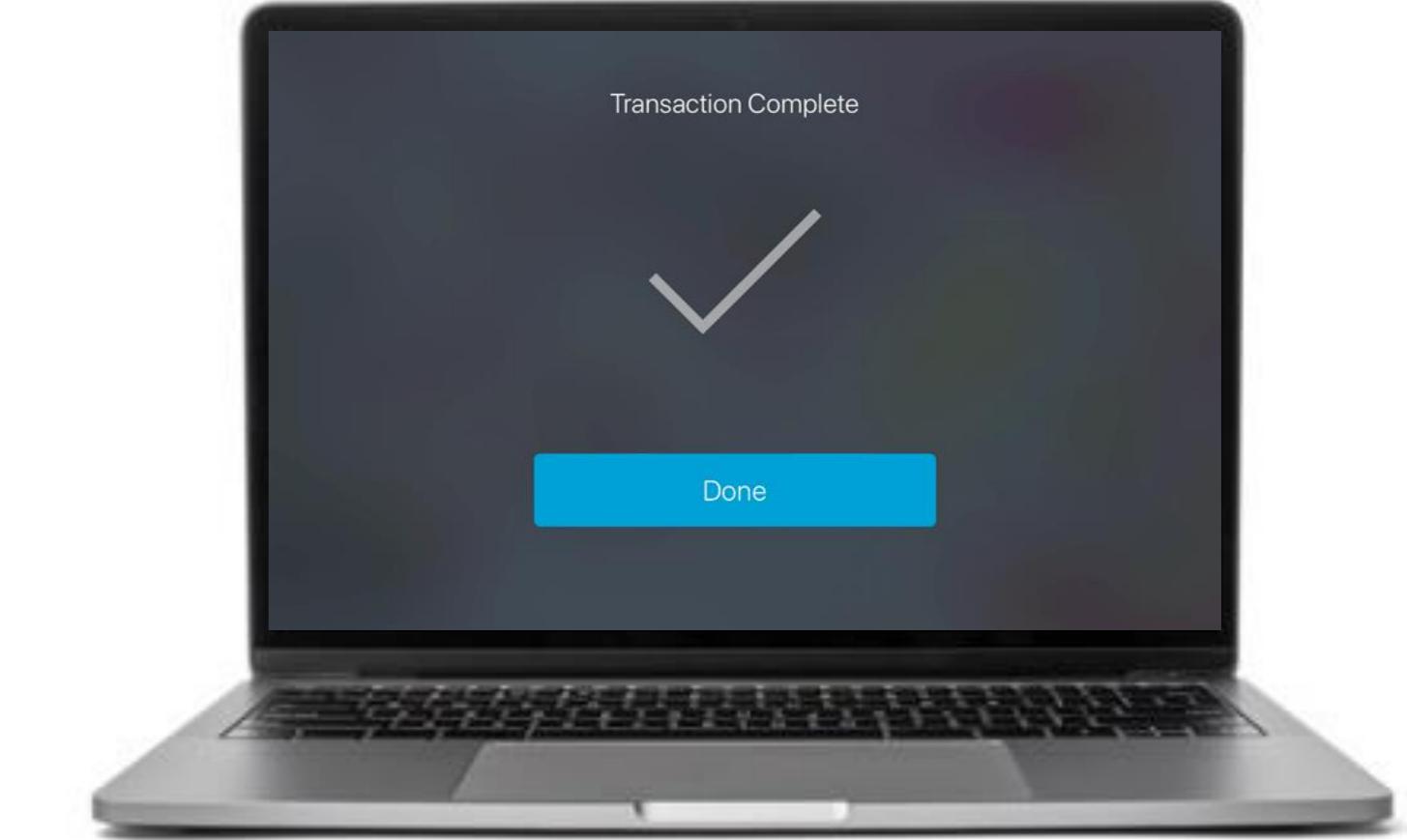
Continuous performance, automatically



ALL (1,140) CLOUD (924)

SCALE	Resize Actions (197)
Volumes (291)	<input type="checkbox"/> Workload Controller Name <input checked="" type="checkbox"/> alligator <input checked="" type="checkbox"/> load <input checked="" type="checkbox"/> user
Virtual Machines (133)	Kubernetes-EKS-Nordwind Kubernetes-EKS-Services Kubernetes-EKS-User
Database Servers (14)	Container Cluster GameServer Groundcover Jaws Lumberjacks Piranha Reindeer Troll Whale
DELETE	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec trace...
Volumes (275)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec trac...
RESIZE	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec user
Workload Controllers (197)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec ib...
Application Components (110)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec gr...
Containers (4)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec ro...
Namespaces (1)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec a...
MOVE	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec pl...
Container Pods (48)	<input checked="" type="checkbox"/> VMem Limit Congestion in Container Spec auto...
SUSPEND	<input checked="" type="checkbox"/> VMem Limit Congestion & VCPU Throttling Cong...
Container Pods (27)	<input checked="" type="checkbox"/> VCPU Throttling Congestion in Container Spec fl...
Virtual Machines (3)	<input checked="" type="checkbox"/> Underutilized VMem Limit & VCPU Throttling Con...
Application Components (2)	<input checked="" type="checkbox"/> Underutilized VMem Limit & VCPU Throttling Con...
PROVISION	<input checked="" type="checkbox"/> Underutilized VMem Limit & Underutilized VCPU ...

1 - 30 of 197



Continuous performance



Unified teams



Unlock innovation

Automating continuous optimization delivers real business outcomes

Observability

API-Driven Discovery.

Applications

Kubernetes

Cloud Compute

Cloud Storage

Cloud DBaaS

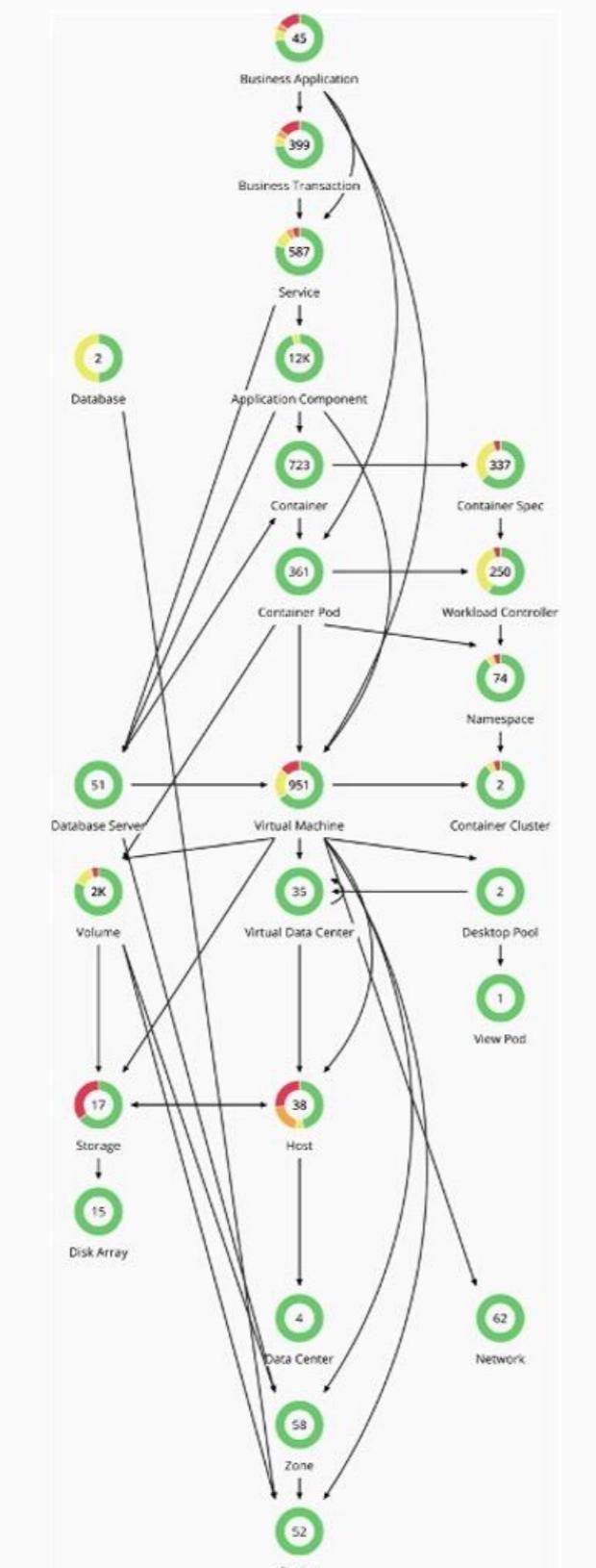
Cloud Reserved

Instances & Discounts

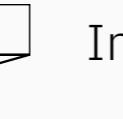
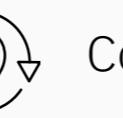
Hybrid & Multicloud

Actionable Insights

App-Infra Mapping

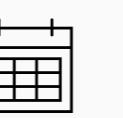


Trustworthy Actions

-  Intelligent sizing
-  Continuous placement
-  Dynamic scaling
-  Start/stop

Automation

Execute & Integrate Actions

-  Manually (with a click)
-  Scheduled
-  Pipelines & Workflows
-  Real-time



Improve application performance



Increase IT team productivity

33% Reduction in public cloud spend due to dynamic scaling and workload resizing

75% Improved infrastructure utilization and avoided annual refresh costs by 75%

70% By understanding app demand, avoided required infrastructure growth spend by 70%

Sustainable IT

Optimizing application resource consumption either in the datacenter, the public cloud, or both, improved an organization's long-term energy consumption profile.

Sustainably assure application performance as you digitally transform the business



Continuous application performance at the lowest cost

Data center optimization

More effective use of existing assets, more effective purchasing for infrastructure growth.

Cloud migration planning

App-driven, optimized planning ensures responsible cloud consumption from the start.

Continuous cloud optimization

Safely reduce cloud consumption. Continuously consume sustainably as the business grows.

Sustainable elastic cloud

Elastically scale modern apps based on response-time, achieving great digital experiences *and* elasticity.

Scope 1 &2

Scope 3

How IBM's own data center is using IBM Turbonomic to support corporate sustainability goal: net zero greenhouse gas emissions by 2030

IBM Turbonomic identified hidden resources and where they have been too lean.

Leveraging integrations with Instana, OpenShift and IBM Flash System (Storage).

IBM Hursley's Hyperscale Cloud Data Centre (HCDC) is one of IBM's flagship data centers consisting of a 27,000 square foot room and supporting over 11,000 developers. They deploy leading technologies, with a focus on energy savings and optimization for the last decade.

It supports:

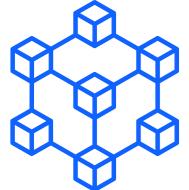
- 580 racks containing IBM development
- ~4,500 physical systems
- ~87% virtualized with a range of technologies including: 2x private developer clouds, and ~6,000 VMware based systems
- >10 Petabytes of enterprise grade storage
- 11 mainframes including the latest z16
- 1-100G networking with direct 10G links to IBM SoftLayer

“When we first provisioned Turbonomic we were impressed with how quickly we got it running. One of the main benefits is that it gives assurance of your environment, continues to give recommendations, while also allowing you to customize policies.”

Colin Holyoake
IBM Cloud Datacenter Technical Manager & Master Inventor

IBM Hursley
Hyperscale Cloud Data Centre (HCDC)

Top 5 US Bank



Challenges

Performance risks

Inefficiency

Managing complex environment

- 240,000+ VDI
- 120,000+ VSI
- 100+ OpenShift Clusters
- 60,000+ Containers

Achieves \$27 million
in ROI via improved
application performance



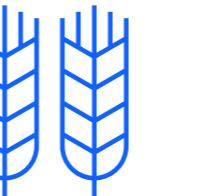
Solution

“With the help of Turbonomic we have been able to achieve **\$27M in ROI via improved performance and reductions in L1 & L2 tickets.** We have seen an 80% reduction for resource requests in addition to a reduction of 14,000 tickets PER MONTH!”

— MD End User Services

Integrations

- AppDynamics
- VMware
- Red Hat OpenShift

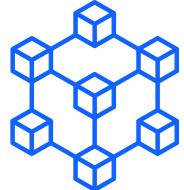


Results

- **400 Physical ESX hosts suspended over 3 years** by managing performance instead of OP ratio
- **\$800K Savings** in OS Segmentation alone. **\$1M+ Savings in DB Licensing** Segmentation
- Lowered CPU contention by 40%, improving VDI performance by automating 1,000 actions per week, while also improving density by 17%
- Cross-cluster migrations improved resiliency and performance; maintains HA by mitigating IaaS performance risk – VM dynamic placement to avoid resource congestion



Top 5 US Bank



Challenges

Performance risks

Inefficiency

Managing complex environment

- 3,000+ Business applications
- 70,000+ Other applications
- 60,000+ VMs
- 4,000 Hosts

Assures performance
for 2,000+ business
applications



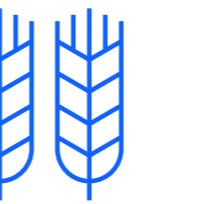
Solution

“As we accelerate our digital transformation and transition to the next generation architecture, **Turbonomic provides a way to ensure and gain direct insight into the performance of our business applications!**”

— Managing Director, Infrastructure

Integrations

- AppDynamics
- VMware

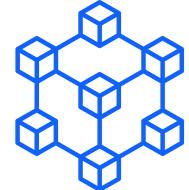


Results

- Integrated AppDynamics and Turbonomic to use application metrics to make the best resourcing decisions and improve end user experience
- Additional headroom for over 1,200 VMs with existing hardware with placement automation enabled while considering all HA compliance policies
- Reduced MTTR; reduce performance risks by using Turbonomic decisions and automating actions



Top 15 US Bank



Challenges

Performance risks

Inefficiency

Managing complex environment



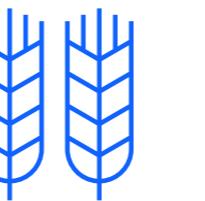
Solution

Turbonomic automatically generated resourcing actions to improve the health of this complex environment...

- 700,000+ actions to reduce performance risks
- 55,000+ actions to maintain compliance
- 45,000+ actions to improve efficiency

Integrations

- ServiceNow
- Ansible
- VMware



Results

- 240 TB reserved memory reclaimed
- 122 TB storage reclaimed (~\$500k)
- Simultaneously increased IT productivity with 800,000+ automatically generated actions optimizing for performance, compliance, and cost

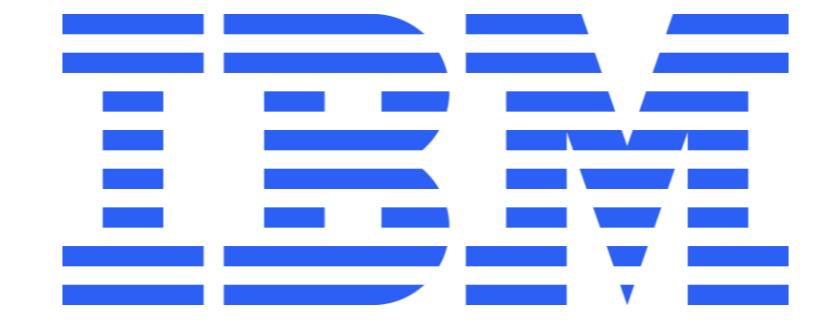


Next steps

Put us to the test...

- See actions in 30 min or less.
- Execute a non-disruptive action.
- Congratulations, there is your first step towards accelerating sustainability through elasticity!





Additional client examples

SulAmérica case study

Turbonomic automation on Red Hat OpenShift improves performance and efficiency through peak demand.

[Read full case study](#)



Business problem

- Operating at scale
- How to assure performance for 57 business applications on OpenShift (7,000+ containers; 3,000+ Pods)

Solution

- Low app response time even under peak demand
- 70% reduction in tickets
- 11% improvement in node density

Key Integrations

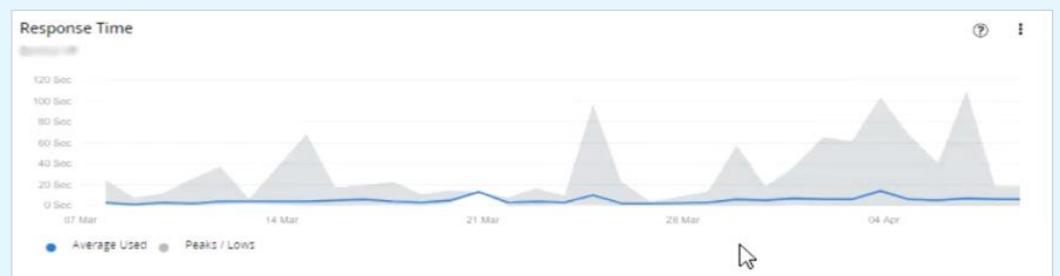
- Dynatrace
- Red Hat OpenShift
- VMware
- Azure
- AWS

“Our team’s macro goal is to deliver an application- and SLO-driven hybrid cloud. Applications will run wherever it best suits the business, and they will continuously perform and delight our customers. Turbonomic is not only helping us specifically operationalize our vision, but also giving us the time back to focus on what strategically impacts SulAmérica’s business.”

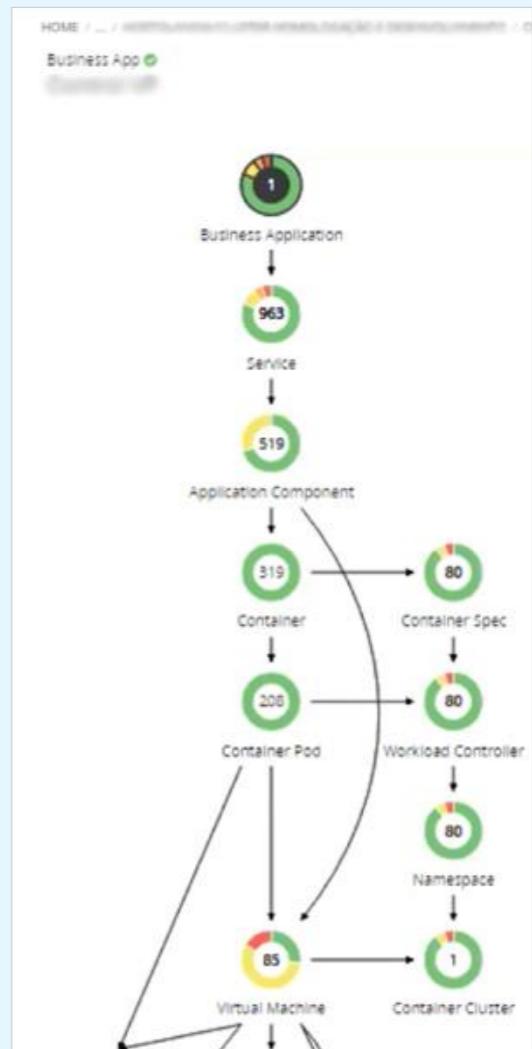
Rafael Noval

Technology Leader of NOC & Web at SulAmérica

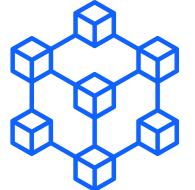
Below: As SulAmérica’s travel insurance app experiences peak and fluctuating demand (gray area), Turbonomic maintains low response time (blue line).



Below: SulAmérica’s travel insurance app as it appears in the Turbonomic UI, with full-stack (app to platform to infrastructure) visibility and control. With Turbonomic, the NOC & Web team ensures that customers have a seamless experience—no matter what—as they transact with SulAmérica.



Professional services



Challenges

Stalled onboarding of new applications to the cloud

Assure performance for

- 832 subscriptions
- 45,000 VMs
- 12,500 DBs



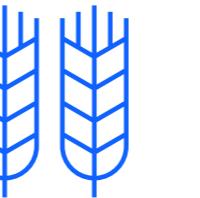
Solution

“We have lots of APM, management and monitoring tools but in terms of giving me the exact recommendations **what do I need to do and what actions to take, there is nothing like that – except for Turbonomic.** Humans are not sustainable for optimization, it requires Turbonomic.”

— Director, Cloud Adoption and Optimization

Integrations

- AppDynamics
- VMware
- Azure
- ServiceNow
- NetApp

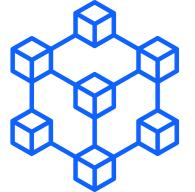


Results

- 42 onboarded apps
- \$6.6M in cloud savings achieved
- 5,284 actions executed
- \$37M in cloud savings identified



Professional services



Challenges

- Poor performance
- Cloud cost overruns

London-based multinational professional services company resolves 745 performance issues & achieves \$12 million in cloud savings



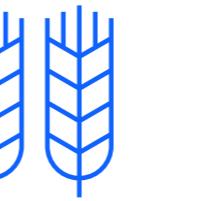
Solution

“A lot of VMs are overprovisioned and we pay a premium for things we don't need, Turbonomic shines the light on these inefficiencies.”

— Associate Director,
Infra. & Cloud Services

Integrations

- AppDynamics
- VMware
- Azure
- Kubernetes

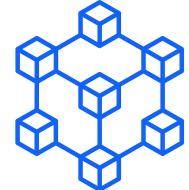


Results

- \$12M in cloud savings achieved
- 745 performance issues resolved
- 13,000 savings actions



Energy company



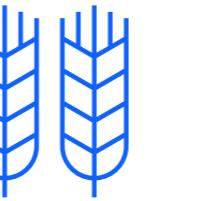
Challenges

- Experiencing application performance issues due to resource congestions.
- Migration to hyperconverged & Azure was “best-guess” on resource requirements, leading to overprovisioning.
- Manual processes of monitoring thresholds to identify any application performance issues.



Solution

- Continuous application performance
- Reduced manual effort and labor due to automated actions
- 433,000 actions executed automatically
- 37,000 hours saved due to automated actions
- 20% reduction in CPU peaks



Results

- 95% reduction in application performance issues due to placement automation
- \$50k savings realized in first month of 2020 for \$600k in CY2020. Future savings of \$120k per month on PaaS based on SQL as workloads are migrated to Azure
- Decreased on-premises data center costs by reclaiming 200TB of wasted storage, over 230 vCPUs and 650 BN of vMem
- \$124 savings per month due to SQL optimization. \$430k savings per month via storage reclamation

