

ACHIEVING LOWER TOTAL COST OF OWNERSHIP (TCO) in Enterprise Edge IT

Updated: 13th March 2025

INTRODUCTION

How much is this really going to cost us?

Not just today, but next year, and the years that follow? Fundamentally, this is the key question that total cost of ownership (TCO) analysis answers. This insight helps decision-makers differentiate an IT investment that can truly provide value and cost-efficiency in the long term, from one that only offers lower upfront costs.

What if you could guarantee complete visibility of TCO from the start? At StorMagic™, we think TCO should be an accurate figure that's shaped by your organization's specific needs, processes, and goals for growth. Additionally, to keep costs from growing unabated, you need an IT solution that offers simplicity, scalability, and reliability long term, too.

This white paper introduces hyperconverged infrastructure (HCI), the ideal solution for enterprise edge environments. We'll explore how HCI can support your goal to achieve a lower TCO and futureproof your IT.

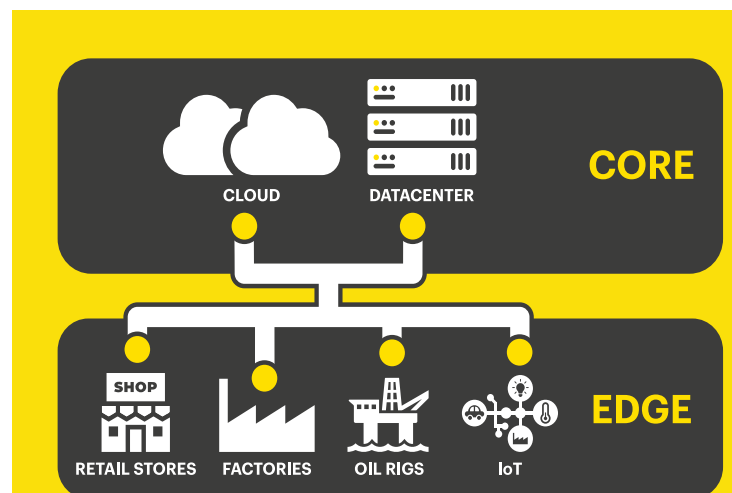
ENTERPRISE EDGE, TOTAL COST OF OWNERSHIP (TCO), AND HYPERCONVERGED INFRASTRUCTURE

In an era of large, complex, and data-dependant enterprise operations, lightweight HCI edge solutions have reshaped the way you can manage IT infrastructure.

Finding ways to drive efficiency, reliability, and value at the edge is more important than ever. It's no small feat, and the task of implementing it can seem complex and cumbersome. Surely, a large organization with either bustling factory floors, hundreds to thousands of retail stores, or remote offshore oil rigs will rely on equally heavyweight IT infrastructure?

This doesn't have to be the case. A solution exists that's equally as powerful and enterprise-grade as on-premise or cloud solutions, without the IT complexity.

Hyperconverged infrastructure (HCI) is lightweight and enables remote and effortless management of IT at the edge. Data is processed locally, and innovative management capabilities mean that data can be acted upon, where it is created, in real-time. In an era of large, complex,



Applications can be run at edge sites without processing the data at the core



and data-dependant enterprise operations, lightweight edge computing solutions have reshaped the way enterprises manage their IT infrastructure.

And the greatest benefit? Lightweight solutions have a lower TCO compared to cloud-only consumption-based technology or datacenter tools deployed at the edge.

It seems simple, but when a large organization can apply a lightweight, low-cost, simple, and reliable solution to their operations – it’s an unmissable opportunity.

Let’s explore the definition of TCO and why it’s an important metric to apply to your edge IT environment.

DEFINING TOTAL COST OF OWNERSHIP (TCO)

Great TCO outcomes require an IT solution that scales with your business and a vendor that provides transparent costs, not just pricing, from the start.

You’re likely familiar with the concept of TCO, because we all know upfront costs are just the beginning of long-term financial commitments. TCO calculates the purchase price of an asset, plus the costs of its operation during its lifespan, including eventual retirement.

Long-term costs during an IT investment’s useful lifespan, and ultimate disposal, can impact its value in the long run. The two most common ways your business will categorize these expenses are capital expenditures (CapEx) and operating expenses (OpEx).

TCO is important because, beyond vendor quotes, every leadership team knows that new IT has additional costs that appear with time. For example, the costs of deployment, scalability, downtime, software licensing, training, and management aren’t usually laid out clearly in the product proposal. In most cases, they can be difficult to forecast.

Enterprises today cannot afford the delays introduced by centralized data processing. Edge computing enables us to process data at its point of origin, significantly reducing latency and enhancing decision-making speed in real-time environments. This is a significant development for industries that rely on real-time decision-making. It enables us to act faster, avoid potential risks, and provide superior customer experiences

John Harrington,
CIO, Global Manufacturing Firm

Key Considerations in TCO

It’s in the name: total cost of ownership encompasses the entire lifecycle of your IT investment. The key factors of TCO include:

Acquisition costs	Hardware, software, licenses, and upfront services.
Operating costs	Maintenance, support, power, cooling, training, and staffing.
Indirect costs	Downtime, performance, and compliance.
Vendor-specific costs	Subscription requirements, migration costs, upgrades, and potential for long-term vendor lock-in.
Disposal	Retirement, replacement, and transition to a new product.

When making a vendor decision, be careful of these hidden costs as they can significantly impact the overall value and viability of your IT investment.

TCO analysis helps you spot these additional expenses so you can plan more accurately. You will also avoid budget surprises and ensure your IT truly supports your goals. A solid TCO assessment keeps your investment smart, sustainable, and aligned with what your organization needs to succeed.



When is TCO Useful?

TCO can be used in a variety of situations. We think it should be a fundamental factor in every IT purchase decision.

Business purchases	To analyze the cost of acquiring and maintaining a product.
Comparisons	To understand the competitive differentiators when assessing products.
Vendor negotiations	To influence and support better terms during purchase negotiations.
Outsourcing	To determine whether you should outsource an operation or manage it in-house.

HOW HYPERCONVERGED INFRASTRUCTURE OFFERS A COMPETITIVE TCO

The right HCI software with great features and capabilities will enable you to achieve a competitive TCO long-term. These features are designed to ensure your business can stay cost-effective and accurately forecast future costs – rather than costs unexpectedly rising over time.

With these three key factors in mind, let's explore why HCI offers a competitive and lower TCO.



At StorMagic, we support O'Reilly, a large retailer with 6,400 stores, in improving uptime across its enterprise edge environment. The cost of downtime directly impacts store revenue as minutes of transactions are lost in-store.

Thanks to our efforts, they've experienced no downtime over the past three years.

3 Key Factors That Enable Cost-efficiency and Lower TCO

1. Simplicity

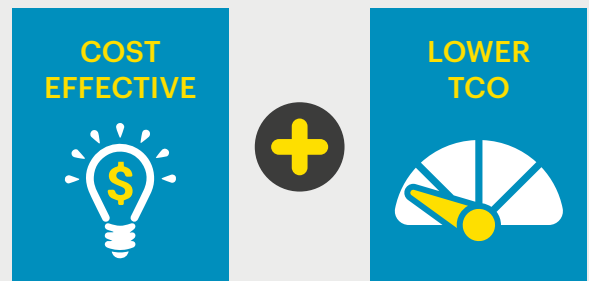
Lightweight, zero-touch, and remotely managed software that is easy to deploy reduces maintenance, support, training, and staffing requirements. This reduces operational complexity and lowers costs overall.

2. Reliability

Software designed for 100% uptime minimizes risks in downtime affecting business continuity, performance, and compliance.

3. Scalability

Scalable highly available software on more efficient server nodes reduces hardware, software, implementation, power, and cooling costs allowing customers to grow or shrink edge fleets against business needs while ensuring predictable, manageable costs.



Proven Uptime in Enterprise Environments

High uptime rates keep operations running smoothly, reduce costs from unexpected downtime, and minimize revenue losses from interruptions. Reliable HCI with high uptime lowers downtime expenses and brings down long-term maintenance costs by requiring fewer repairs and interventions.

When we quantify the financial impact of higher uptime (like 99.99% vs 99.5%), it demonstrates why investing in a reliable HCI significantly reduces TCO.





Business Continuity for Edge Environments

In edge environments, stability and consistent performance directly impact critical localized processes, where even minor disruptions can lead to productivity loss and revenue drops.

Resilient HCI infrastructure at these distributed sites avoids costly delays and operational gaps, keeping business on track. The advantages are fewer breakdowns, simpler maintenance, and uninterrupted local operations. Combined, this reduces TCO, demonstrating how edge reliability supports both daily efficiency and long-term financial benefits.



Enterprise-level Support

External support often adds significant expenses that can quickly increase operational costs. However, some HCI software vendors include dedicated support in the product cost, so you significantly reduce TCO. Bundling support eliminates unpredictable third-party service fees and ensures you access expert assistance without incurring additional expenses.

The best vendors will provide 24x7 comprehensive technical support, allowing your team to troubleshoot issues immediately and minimize disruptions. This proactive support minimizes costly outages and fosters smoother operations, freeing your staff from managing relationships with external providers.

Incorporating vendor support also removes the need for expert hiring or training, making support a predictable fixed cost. This approach lowers TCO while enhancing system reliability, allowing your team to focus on core business activities instead of edge IT troubleshooting.



Lightweight IT Infrastructure

Lightweight, or "thin," HCI software can process data locally and enable remote management, allowing teams to act on data in real time from any location. This design eliminates bulky infrastructure, reducing hardware and maintenance costs. It runs efficiently on minimal resources while maintaining robust processing power and high performance.

The best lightweight HCI handles complex workloads, delivering rapid insights through advanced data processing without excessive power usage or space. Its agile scalability lets teams easily adjust IT infrastructure as business needs change, avoiding costly hardware upgrades and time-consuming configurations.

This flexibility keeps costs predictable and lowers TCO, helping you achieve enterprise-grade performance while managing a streamlined, cost-effective infrastructure.



Site Management

Even enterprise-level IT software should be easy-to-use, lightweight, and intuitive, without sacrificing performance. HCI software makes managing thousands of sites as straightforward as possible, just as easily as managing a single one-location site.

By reducing this complexity at the edge, your business saves money long-term. There are no extraneous costs of staffing, training, or obtaining external support for your chosen software. Additionally, every site can be managed remotely – so there's no need to cover staff in remote locations – further lowering overall TCO.





Easy Migrations

HCI software can be user-friendly with centralized controls, and where this is the case, it's often easy to move across different hardware stacks. This flexibility is essential, as the best software works with a wide range of hardware without restricting users to specific equipment.

To achieve lower TCO, choose a HCI vendor allows existing licenses to be migrated at no additional costs. This is because, ideally, you should be able to transfer software licenses to new hardware without buying new ones each time.

However, some vendors may require additional purchases, depending on how the software is licensed. For example, licenses based on CPU cores, like those for VMware, increase in cost if the new hardware has more cores.



Lower Software Costs Per Site

Using a single piece of software to manage computing, storage, and networking simplifies IT infrastructure and can reduce overall costs.

This setup brings efficiency and support savings, as teams only need to manage, troubleshoot, and maintain one system. This leads to simpler operations and fewer support demands. Additionally, it helps you achieve lower direct costs and lower costs over time thanks to the easier management capabilities, further lowering TCO.



Lower Hardware Costs Per Site

HCI software reduces TCO by lowering the hardware and resources needed to run effectively. With lower system requirements, it needs less computing, storage, and networking to support business applications. Instead of requiring extra resources, it operates with minimal overhead.

For example, if applications need 6TB of storage, HCI software with low overhead might only add 1TB more, instead of 4TB - reducing the total from 10TB to just 7TB per cluster.

Some HCI software also simplifies the cluster setup, using just 2 nodes instead of the 3 or more that many other systems require. Plus, some solutions run on affordable, standard hardware, like common x86 servers, instead of requiring expensive, vendor-specific appliances or heavily restricted compatibility lists. By avoiding costly, fixed hardware setups, HCI reduces costs upfront and keeps future upgrades or migrations affordable and easy.



Deployment, Operating, and Maintenance Costs

Simplifying IT infrastructure lowers energy consumption and resource demands, further driving down TCO. HCI simplifies IT by integrating computing, storage, and networking into a unified system.

This integration significantly reduces the number of physical components, which lowers energy consumption and minimizes resource demands. Additionally, HCI eliminates the need for separate systems reducing power requirements for operation and cooling. When we quantify this, it demonstrates lower TCO.



TCO SPOTLIGHT: EXPLORING TWO NODE CLUSTERS

For many organizations, a three-node cluster architecture is a trusted solution for ensuring high availability and performance. It provides proven reliability and scalability, making it an excellent choice for many use cases. However, depending on specific requirements, a two-node cluster architecture can offer an alternative path to achieving similar results with potentially lower TCO.

Two-node architecture can provide high availability while minimizing hardware costs. It's proven that two physical servers per location can satisfy most organizations' requirements. With this method, increasing the number of processor cores or increasing clock speed is easy and cost-effective. It also satisfies performance needs using only two servers.

Most importantly, this setup ensures reliable performance and uptime without significant investment in hardware

In our approach at StorMagic, we achieve high availability using a lightweight remote witness. This system is designed to withstand [failure scenarios](#) to ensure application uptime. This is even in worst-case sequences, such as a witness going offline followed by a server failing. Our architecture safeguards against data loss and "split-brain" issues, maintaining data integrity.

Additionally, with simple deployment and centralized management control tools, like [Edge Control](#), it's easy to expand two-node clusters across hundreds, and even thousands, of sites.

Ultimately, there's no one-size-fits-all solution. Whether your needs align with a three-node setup or you're exploring new ways to optimize costs with a two-node architecture, StorMagic provides the tools and expertise to help you make the best choice for your environment, with the overall goal of supporting you to lower TCO, no matter which you choose.

TCO SPOTLIGHT: FLEXIBILITY TO MEET FUTURE DATA DEMANDS

Not every IT solution applicable to edge environments is purpose-built for the edge. Even leading industry vendors are datacenter-centric and their solutions are 'pushed out' to edge customers.

These solutions can't necessarily scale down. Many businesses risk their IT infrastructure becoming 'too big' or complex, which can increase costs over time. Scaling up can become equally as costly, too.

With StorMagic solutions, our products are purpose-built for the edge. They enable flexibility to meet your ever-changing business

demands. You can scale workload, data, and application demands, at each of your locations, to your exact needs.

Importantly, it's just as easy to scale your IT infrastructure down as it is to scale up. This is the level of flexibility required in edge environments. Additionally, HCI software is straightforward to upgrade and can accommodate additional cores without the need to purchase new software licenses. Considering these benefits, it's clear why this level of flexibility is a key differentiator for reducing TCO.

2 KEY FACTORS THAT SUPPORT TCO ANALYSIS

Now we understand why HCI offers a competitive TCO in edge environments, let's explore the key factors to consider when choosing a vendor.

These factors will help ensure that your chosen solution not only meets your immediate needs but also supports scalability, reliability, and cost-efficiency in the long term.



FACTOR #1 UNDERSTANDING YOUR NEEDS



At StorMagic, we aim to deliver the best TCO for computing at the edge with lower CapEx and OpEx throughout our solutions' lifecycle. The following questions support our initial TCO estimations and help us to understand your needs. Our [self-serve TCO calculator](#) lets you apply them to your requirements.

Scoping Questions

- What solutions are you interested in?
- Where will your chosen solutions be deployed?
- How many server clusters are needed?

Hardware Questions

- Are you deploying new servers?
- What are the cost and power input profiles per server (watts)?

Software Questions

- What licensing type are you looking for (i.e. subscription)?
- Desired storage capacity per server?
- Desired licensing term?
- Do you require any additional features (i.e. data encryption or caching)?
- What solution are you comparing our product against?
- Number of CPUs per server and cores per single CPU?



FACTOR #2 STORAGE PERFORMANCE ANALYSIS



History always has a way of repeating itself. And this age-old adage shouldn't be ignored, especially when it comes to TCO. Historical trends within your organization can inform your strategic requirements for the future. Assess where your data requirements are and where they might've struggled in the past.

[Storage performance analysis](#) provides insight into your IT infrastructure. It answers questions such as:

- What does your organization actually need?
- What does your infrastructure currently provide?

- Is your storage infrastructure performing well?
- Is your current infrastructure under-utilized?

This level of insight enables you to provision your IT requirements effectively. Data like this also provides a complete picture of your IT operations and performance. These factors are crucial to consider when making an IT investment, and understanding your needs allows you to predict TCO.



HCI IS THE ANSWER TO LOWER TCO IN ENTERPRISE EDGE IT

The benefits of HCI reach beyond lower upfront investment. By reducing operational expenses down the line, HCI enables you to achieve predictable costs long-term. Additionally, starting with a clear view of TCO lets you avoid budget surprises and stay focused on what matters: growing your business without IT complications slowing you down.

For companies that view the edge as the future, HCI enables you to create a reliable path towards it. Beyond reducing costs, HCI brings greater simplicity and reliability, too. It provides the flexibility to adapt, the reliability to meet demands, and the simplicity to let your teams focus on what drives value. Invest in HCI and worry less about your IT budget growing over time.

WANT TO LEARN MORE ABOUT HYPERCONVERGED INFRASTRUCTURE (HCI)?

We believe HCI is one of the greatest opportunities for today's enterprise edge IT environments. Simple, reliable, and low TCO, find out why today.

[Discover HCI for Enterprise Edge](#)



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