
The Hyperconvergence Handbook:
An innovator's guide
to achieving the
hyperpossible

Table of contents

Introduction

In 2016 Gartner predicted that hyperconverged integrated systems would be mainstream in five years, with the global market reaching nearly $5 billion by 2019.[1] A more recent projection estimates the integrated system market is valued at $15.7B, with a five-year CAGR of 9.3% by 2023.[2]

As organizations across all industries evolve to stay competitive, these market forecasts are proving accurate, with data center management being transformed by hyperconvergence technology to provide a competitive advantage.

Hyperconvergence was forged from the concept of converged infrastructure, which sought to simplify data center management by repackaging traditional systems such as computing and storage into a single, prebuilt solution.[3] Rather than repackaging, however, hyperconvergence represents a paradigm shift in both technology and philosophy—and its ongoing evolution is redefining what's possible for organizations of all shapes and sizes.

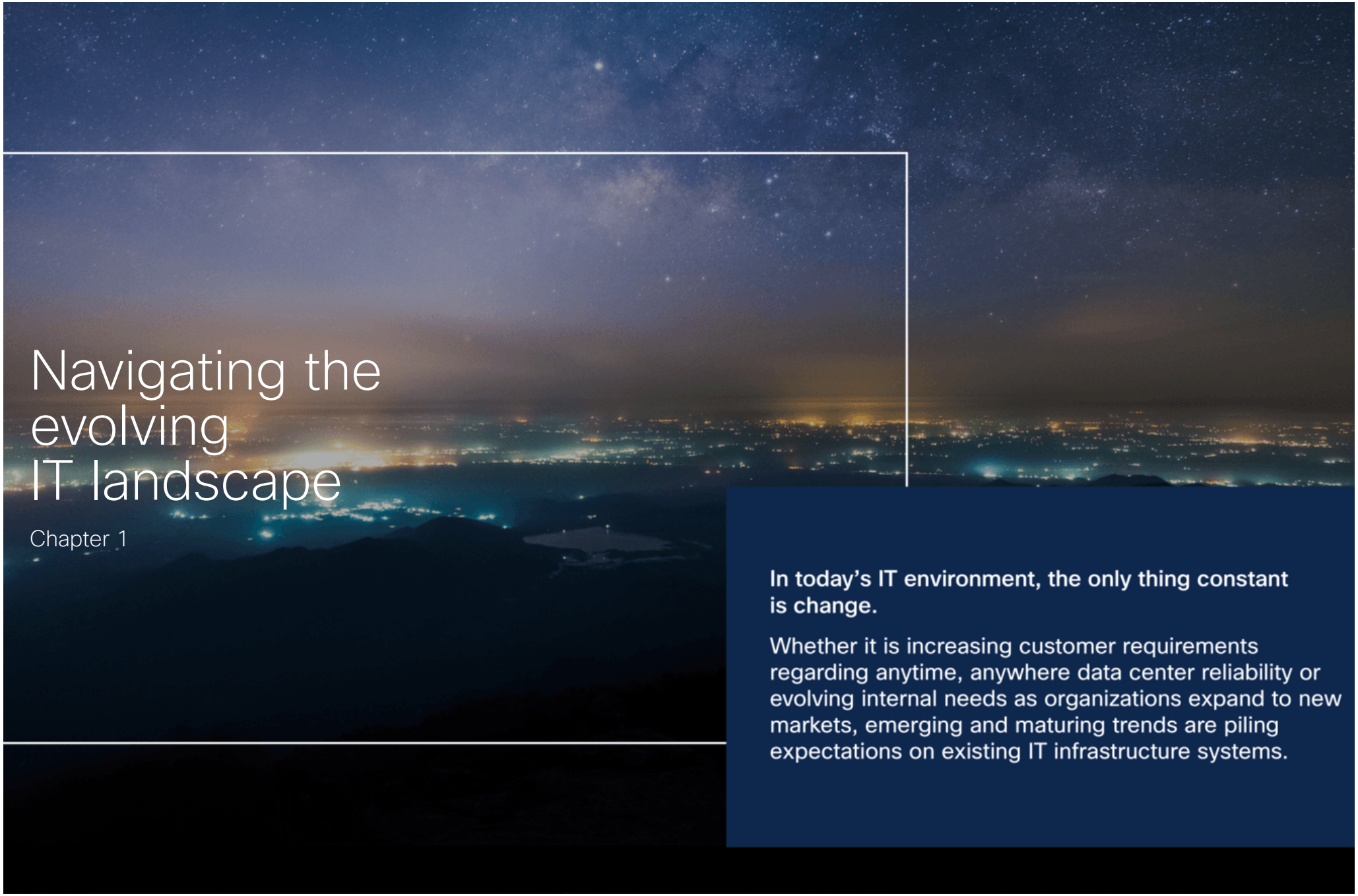
Already, forward-thinking IT and business leaders are applying hyperconvergence technology to an entirely new set of use cases and boldly pursuing the *hyperpossible*. We call these individuals *HCI Innovators*, and they are leading the IT modernization charge for their respective organizations.

Explore this eBook to discover:

How emerging trends are shaping the IT landscape and driving the evolution of hyperconvergence

How hyperconvergence empowers HCI Innovators in any industry to achieve practically anything

How you too can become an HCI Innovator and achieve the hyperpossible



Navigating the evolving IT landscape

Chapter 1

In today's IT environment, the only thing constant is change.

Whether it is increasing customer requirements regarding anytime, anywhere data center reliability or evolving internal needs as organizations expand to new markets, emerging and maturing trends are piling expectations on existing IT infrastructure systems.

Navigating the evolving IT landscape

Take Edge Computing and the Internet of Things (IoT), for example. The International Data Corporation anticipates that nearly 80 billion devices will be connected to the Internet by 2025—that's 152,000 devices per minute.[4]

This explosion in connected devices and the data transfer between them are already dissolving traditional network boundaries and pushing legacy solutions beyond their limits. As more computing power is required at the edges of networks, even single-cloud environments are hitting snags when it comes to handling data volume.[5]

Fortunately for organizations and their IT departments, the same trends that are changing customer and organizational requirements are fueling advances in hyperconvergence technology—and HCI Innovators are already taking advantage of these advances to successfully navigate the current IT landscape.

Although hyperconvergence has its roots in converged infrastructure and storage virtualization, rapid developments and improvements have transitioned it into a powerful solution that encompasses the benefits of both private, on-premises data centers and cloud scaling capabilities.

These developments represent a total rethink of how the different components of a data center can coexist and unite under a central piece of software.

According to Gartner " By 2025, as a result of digital business projects, 75% of enterprise-generated data will be created and processed outside of the traditional, centralized data center or cloud, and increase from less than 10% in 2018"

In addition to promoting operational efficiency, reducing infrastructure costs, and radically improving data center reliability and resilience, the latest advances in hyperconvergence technology include: [6,7]

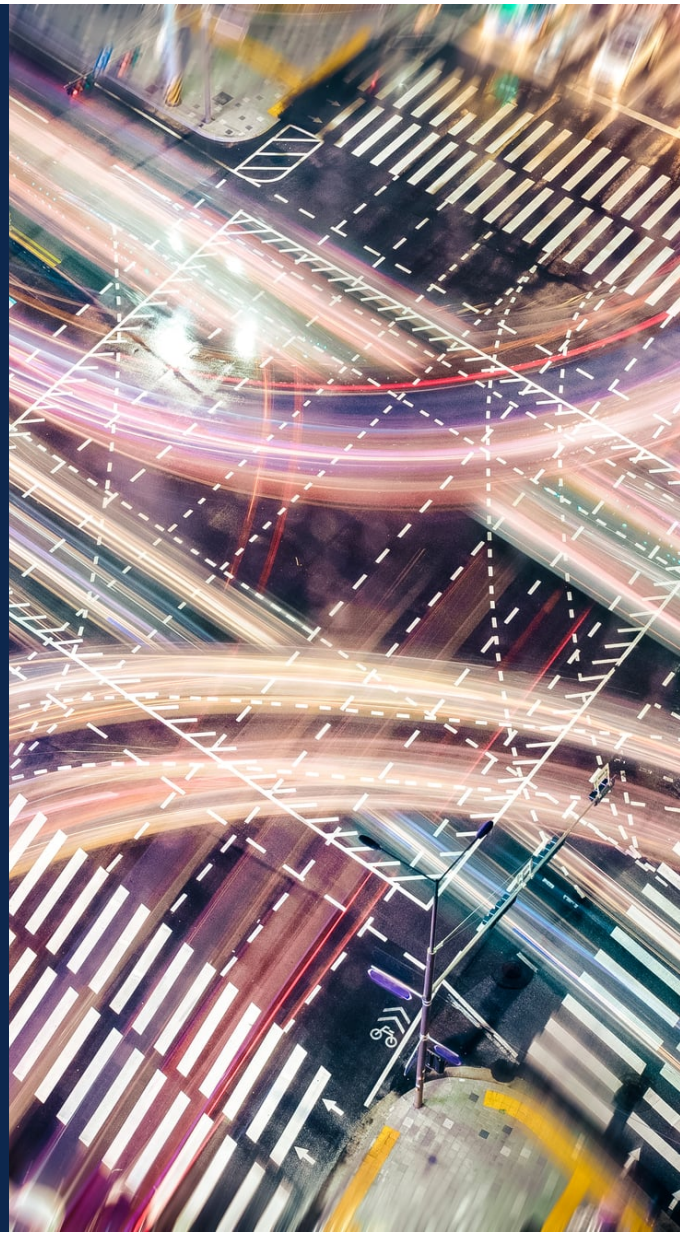
- **Built-in backup** and replication capabilities that improve data protection
- **Easy workload migration** and cloud services deployment
- **Cloudlike scalability** to accommodate fluctuations in compute power and storage needs
- **The ability to process** massive amounts of data at the edge of your network infrastructure

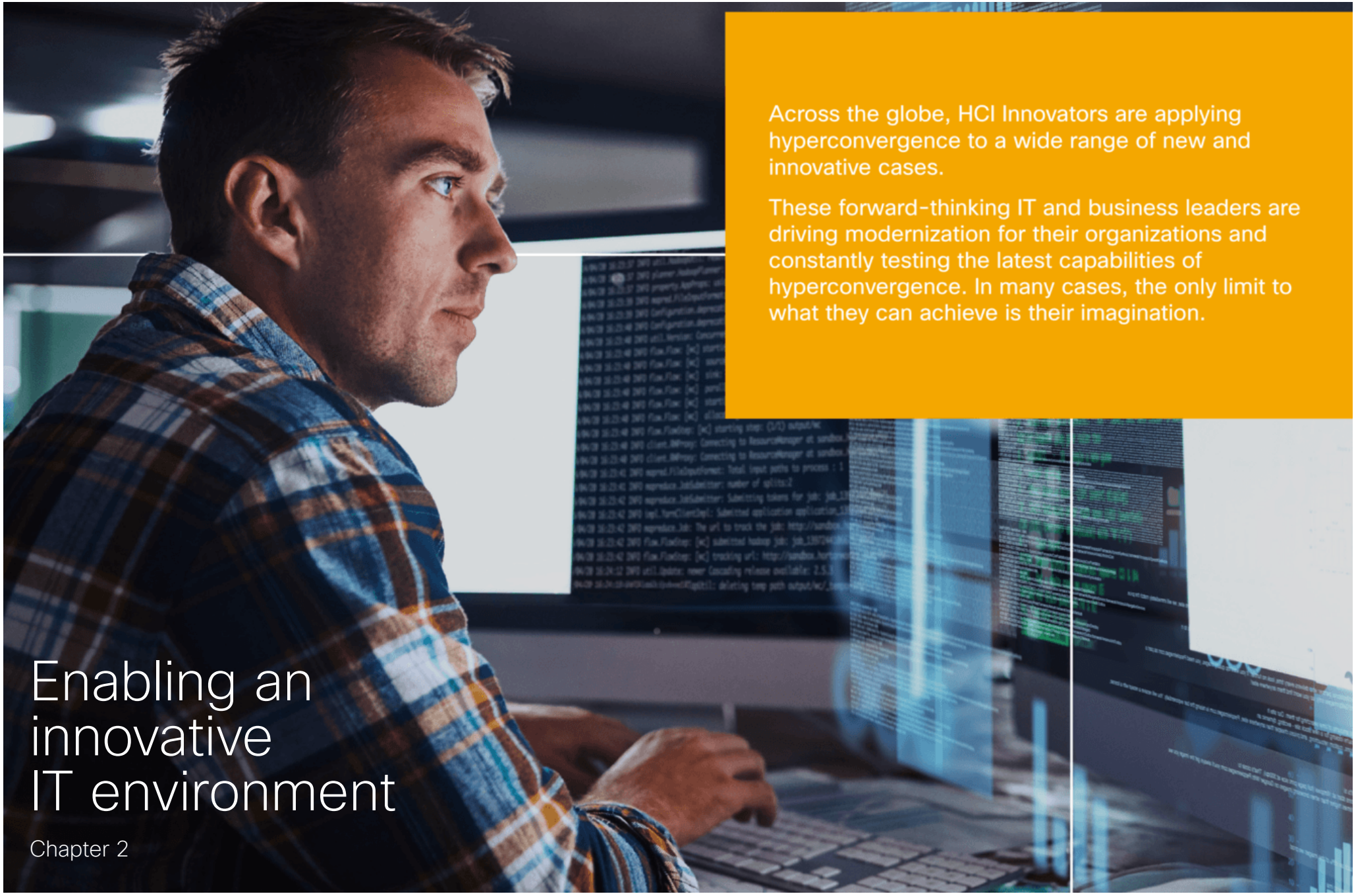
A major way hyperconvergence is driving IT innovation is by enabling multicloud environments. As flexibility and scalability needs increase, more organizations are turning to multiple cloud services providers to tackle issues related to networking, security, analytics, and data center management.[8] Hyperconvergence technology is designed to support multiple hypervisors and offer flexible services for multicloud setups.

By 2023, 80% of workloads will shift to or be created with containers/microservices, reducing per-app infrastructure needs by 60%, while driving a 70% improvement in digital service resiliency.

By 2023, more than 50% of new infrastructure deployed will be in increasingly critical edge locations rather than corporate datacenters, up from less than 10% today.

In the following chapter, we'll examine how HCI Innovators put these hyperconvergence capabilities into practice to power everything from virtual desktop deployments to mission-critical applications.your content here...





Enabling an innovative IT environment

Chapter 2

Across the globe, HCI Innovators are applying hyperconvergence to a wide range of new and innovative cases.

These forward-thinking IT and business leaders are driving modernization for their organizations and constantly testing the latest capabilities of hyperconvergence. In many cases, the only limit to what they can achieve is their imagination.

RESCUING FOOD FOR NEW YORK'S HUNGRY
CITY HARVEST

In New York City, a nonprofit organization is using leading hyperconvergence technology to rapidly scale operations and power its hunger relief efforts.[9]

Watch Video

City Harvest was founded in 1982 with a mission to alleviate hunger across the five boroughs by redistributing surplus food from grocers, farms, restaurants, and manufacturers to people in need. In 2016, the organization distributed 55 million pounds of excess food free of charge to 500 community programs in New York City, and it has plans to quickly expand operations by 30 percent.

Using a hyperconverged infrastructure to power virtual desktops helps City Harvest simplify IT and improve efficiency. With secure, anywhere access to files, emails, and data, its 160 employees and 15,000 volunteers spend less time waiting for physical computers and keep their focus on alleviating hunger. The rapid scaling capabilities of a hyperconverged infrastructure solution continue to support City Harvest's growth and ultimately help the organization redistribute millions more pounds of food each year.

Challenges

- **Prepare** for 30% growth
- **Build** a virtual desktop infrastructure
- **Increase** scalability and performance

Solutions

- **Cisco® HyperFlex™** hyperconverged infrastructure

Results

- **Delivers** the seamless scalability required to support growth
- **Simplifies** desktop and infrastructure management
- **Saves** 75% on user endpoints

EXMAR

Energy Industry Leader Chooses Cisco HyperFlex and Cisco Intersight Over Public Cloud

Watch Video

EXMAR is a provider of floating solutions for the energy industry. Its specialized ships, infrastructure, and services support the offshore extraction, transportation, and transformation of natural gases, petrochemical gases, and liquid hydrocarbons. EXMAR is constantly reinventing itself in the everchanging energy industry. Because of this, the company's two-person IT team was struggling to maintain the pace. Deploying new computing resources took several days, software and firmware updates took production systems offline, and many nights and weekends were spent in the server room trying to minimize business disruptions. So, EXMAR made the decision the transform its data center infrastructure with Cisco HyperFlex, Cisco UCS, Cisco Intersight, and Cisco security solutions.

Now, the company has a modernized data center infrastructure at a lower cost than cloud and other hyperconverged options, it decreased application latency from 200 to five milliseconds, and it sped up server deployments from days to minutes. Read the case study to learn more.

"We don't have to babysit the data center anymore, HyperFlex has been up and running for two years, and we've had zero downtime."
– David De Roock, ICT Infrastructure Project Manager, EXMAR

Challenges

- **Simplify and accelerate** IT operations
- **Increase** infrastructure resiliency
- **Improve** application performance

Solutions

- **Cisco® HyperFlex™** hyperconverged infrastructure

Results

- **Modernized** data centers at a lower cost than cloud and other hyperconverged options
- **Decreased** application latency from 200 to five milliseconds
- **Sped** up server deployments from days to minutes

CorpFlex
A Cloud do seu negócio em boas mãos

The latest advances in hyperconvergence technology can also be used to support mission-critical applications.

CorpFlex, a Brazilian-based managed IT service provider, uses a hyperconverged infrastructure solution to stay ahead of customer expectations and adapt offerings to stay competitive in the ever-evolving managed services marketplace.[11] Today, CorpFlex leverages hyperconvergence to run its mission-critical Microsoft SQL Server and Oracle databases and applications including SAP ERP and Microsoft apps and deliver innovative services to its customers.

"HyperFlex's approach ensures faster delivery of the environment, lower costs and management efforts, more effective management, coupled with high availability and performance."

– Edivaldo Rocha, CEO, CorpFlex

Challenges

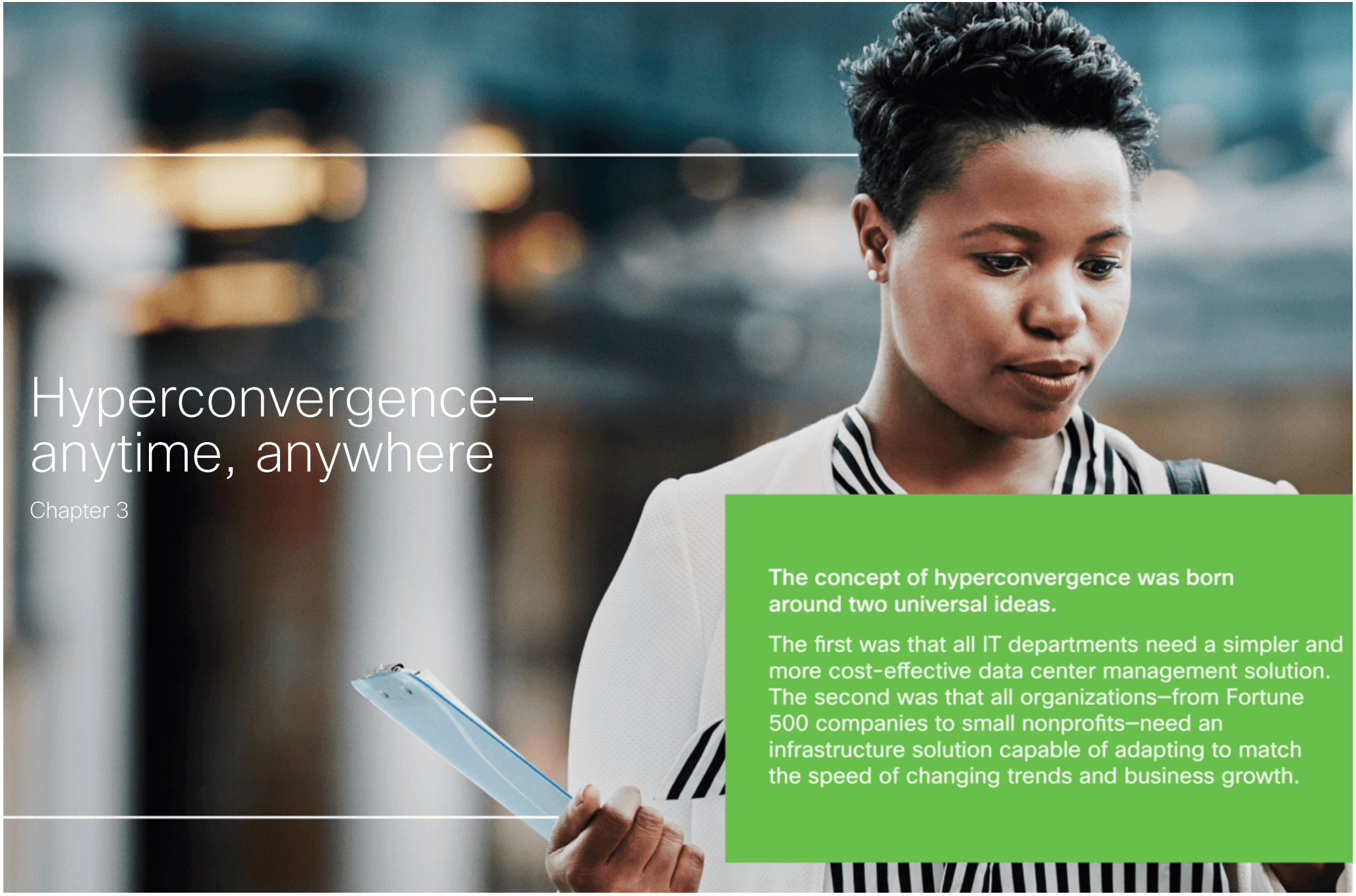
- **Increase** the performance and scalability of its private cloud platform
- **Reduce** downtime for services offered to customers

Solutions

- **Cisco® HyperFlex™** hyperconverged infrastructure

Results

- **Enabled** customers to increase availability
- **Allowed** customers to lower the latency of their critical systems
- **Reduced** total cost of ownership (TCO)



Hyperconvergence—anytime, anywhere

Chapter 3

The concept of hyperconvergence was born around two universal ideas.

The first was that all IT departments need a simpler and more cost-effective data center management solution. The second was that all organizations—from Fortune 500 companies to small nonprofits—need an infrastructure solution capable of adapting to match the speed of changing trends and business growth.

Hyperconvergence—anytime, anywhere

Aspirations of improved organizational agility and data efficiency are not unique to a particular sector, industry, or department. In an increasingly competitive environment, these are now requirements for organizations across all industries that want to stay competitive and drive modernization.

What started out as a natural evolution of convergence has transformed into an end-to-end infrastructure solution that can be used to address virtually any business challenge and applied to any use case. But not all solutions are created equal. Leading hyperconverged infrastructure providers are constantly making additional iterations to their solutions based on current IT trends and ongoing customer feedback.

When considering a hyperconverged infrastructure solution, ensure that the offering is capable of reducing complexity and supporting your growing list of demands and requirements. **To tackle your toughest challenges, you need a solution that can:**[12]

Deploy at edge locations:
Bring the robust feature set of hyperconvergence to your remote or branch office environments with a low-cost, easy-to-deploy, centrally managed solution.

Support any application:
From traditional enterprise applications to big data and analytics applications and to virtualized and containerized software, the right hyperconverged infrastructure solution must be able to support a wide set of application deployment models.

The right hyperconverged infrastructure solution should be able to integrate with your on-premises resources and support any application, at any scale, in any cloud.

Integrate with any cloud:
As multicloud environments become more common, your solution must give you the freedom and flexibility to support multiple hypervisors and deploy your applications in the cloud that makes the most sense.

Scale as you grow:
The right solution will be able to support your IT needs today and adapt as those needs evolve, providing the simplicity and flexibility to handle **any workload and use case.**

ORVIS®

Improving application performance and the e-commerce experience.[13]

Founded in 1856, The **Orvis Company** is the world leader in fly fishing equipment and adventurous living, with retail and data-center operations in both the U.S. and U.K. Since its inception, the company has always emphasized an innovator's mindset within its culture. However, IT limitations and technical debt were making it difficult to innovate, respond, and remain agile for the business.

The company had divergent types of compute and storage, which were segmented. Those technological boundaries hindered quick, agile response to the business.

In addition, Orvis had three separate environments for testing/development, production, and business recovery. The monolithic structure and physical limitations of the infrastructure locked resources to each environment, making resource sharing virtually impossible.

"By adopting Cisco HyperFlex technology, we can more readily say yes to the business and deliver on that yes effectively. We can also confidently embrace our innovator's mindset and pursue projects that will enable us to better serve our customers and the business."
– Tyson Martin, Director and CISO

Learn more about Orvis and other companies using hyperconverged infrastructure in innovative ways on the Compute Customer Stories webpage.

Challenges

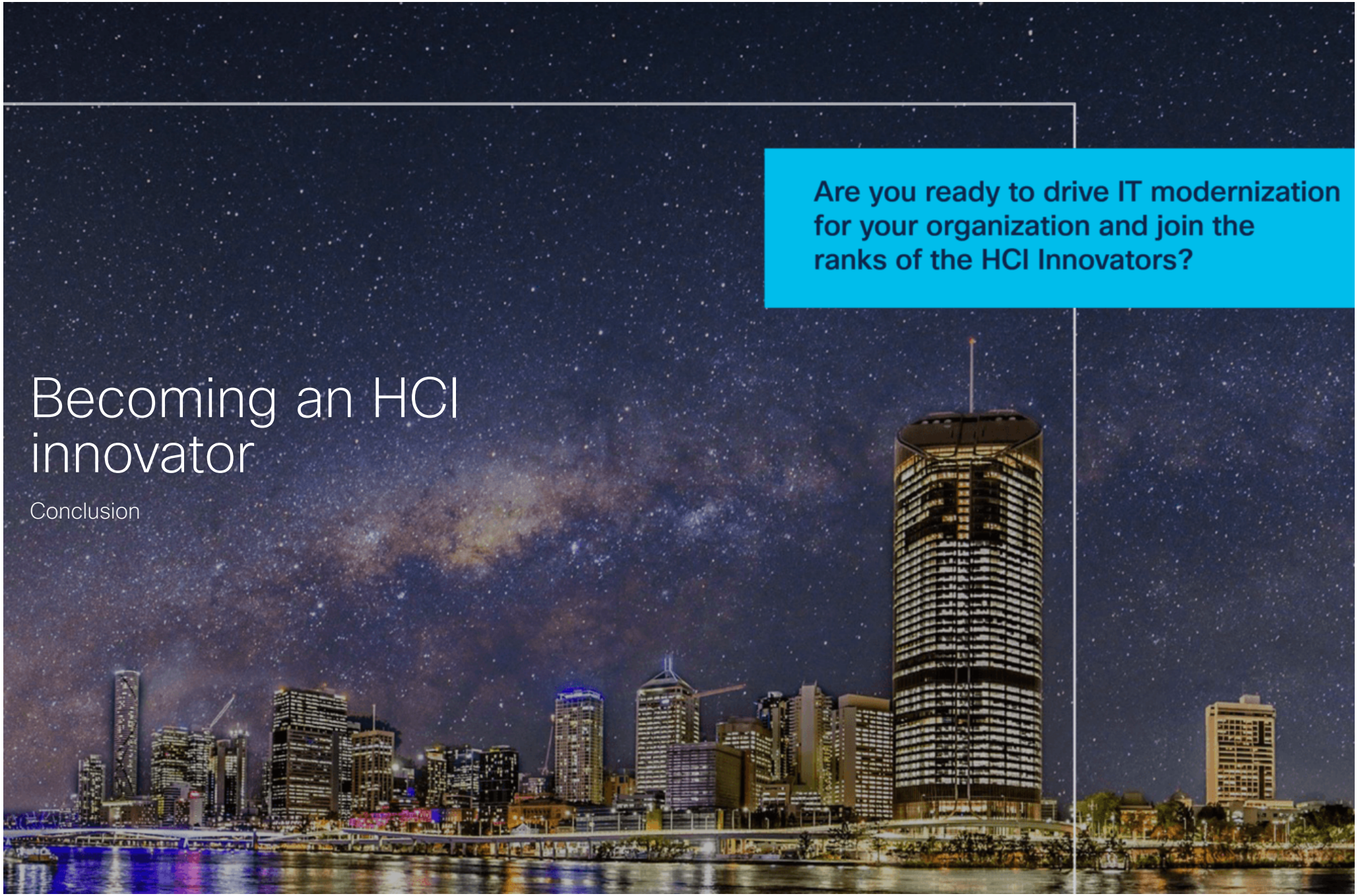
- Simplify the IT environment and reduce the technology footprint
- Eliminate segmentation of compute and storage for improved agility
- Increase flexibility to share resources between testing/development, production, and business recovery environments

Solutions

- Cisco HyperFlex™ all-in-one hyperconverged infrastructure
- One cluster running VSI for core applications including e-commerce, point of sale, warehouse systems, operations, and SQL Server
- Cisco Intersight™ cloud-based management platform

Results

- Achieved the agility to respond quickly to business decisions
- Running 66% more efficiently on the new hyperconverged infrastructure with the same amount of CPUs and memory
- Positioning IT as a true enabler of the business



Becoming an HCI innovator

Conclusion

Conclusion

This ever-growing community of nonprofits, hospitals, manufacturers, and service provider organizations continues to find new and innovative ways to redefine what's possible with hyperconvergence technology–and you could be next.

The future of computing is now. Are you ready to achieve the hyperpossible?

With new applications, exponential increases in data, and tightening budgets, IT teams need modern infrastructure that can increase performance, lower TCO, simplify management, and handle new and future workloads. Cisco UCS M5 Servers and HyperFlex, hyperconverged infrastructure, each provide this in a single solution. And with Cisco Intersight, management gets even easier.

Explore HyperFlex

See what's new in Cisco Computing.

Sources

1. https://www.gartner.com/newsroom/id/3308017
2. https://www.marketsandmarkets.com/PressReleases/hyper-converged-infrastructure.asp
3. http://www.hyperconverged.org/understandingconverged-infrastructure/
4. https://www.forbes.com/sites/michaelkanellos/2016/03/03/152000-smart-devices-everyminute-in-2025-idc-outlines-the-future-of-smartthings/#440f4b7a4b63
5. https://www.cisco.com/c/en/us/solutions/internet-ofthings/edge-computing-technology-gartner.html
6. http://www.hyperconverged.org/hyperconvergedinfrastructure-basics-2/
7. https://www.cio.com/article/3232347/software/top-5-reasons-to-follow-the-hyperconvergence-path.html
8. https://blogs.cisco.com/cloud/cisco-multicloudportfolio
9. https://www.cisco.com/c/en/us/about/case-studiescustomer-success-stories/city-harvest-case-study.html#~stickynav=1
10. https://www.cisco.com/c/dam/global/en_in/about/docs/blk-case-study.pdf?oid=csydc002483
11. https://www.cisco.com/c/dam/en_us/about/casestudies-customer-success-stories/corpflex-casestudy.pdf
12. https://www.cisco.com/c/dam/en/us/products/collateral/hyperconverged-infrastructure/hyperflexhx-series/solution-overview-c22-736815.pdf
13. https://www.cisco.com/c/en/us/about/case-studies-customer-success-stories/orvis.html#~stickynav=1

Cisco HyperFlex™
Systems with Intel®
Xeon® Platinum
processor

Intel, the Intel logo, Xeon, and Xeon Inside are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries

Cisco HyperFlex. Extending the simplicity of hyperconvergence from core to edge and multicloud.

Interested in a HyperFlex Demo?

Ready to talk to Sales?