Hyper-Converged Infrastructure Delivers Value as it Goes Mainstream in the Data Center

IT is adopting HCI for core business applications

- **Streamlined, cost-effective operations** and management
- **Adaptability for automation** through cloud and other new technologies
- **Improved use** of data and analytics
- **Better alignment** of IT performance metrics to business outcomes
- **Ability to serve new business needs** quickly and economically

Overview: A recent study by IDG Research found that 85% of IT leaders say their companies already use or are planning to use hyper-converged infrastructure (HCI). Implementers report lower costs, improved customer experience, better productivity, and increased efficiency from their HCI deployment. This paper covers how HCI is modernizing the data center and helping IT meet the needs of increasingly digital business activity.

"Embrace change or be left behind" has long been a rationale for adopting new technology. Given today's wave of technology advances that allow quick-moving startups to become industry disruptors, embracing new technology has become even more important.

The increasing pace of digital business activity is also driving the need for IT transformation. Changing how data center infrastructure is deployed and consumed can dramatically improve IT's ability to meet new demands for serving the business.

Specifically, IT organizations now need to support greater business agility and value through:

- **Scalability, flexibility, and performance** for a wide range of workloads and applications
- **Fewer silos and reduced deployment complexity**
- **Strong capabilities** for data protection

In recent years, IT organizations have looked to converged infrastructure (CI) to address these requirements. Now, many companies are instead choosing hyper-converged infrastructure (HCI), especially as part (or in lieu) of a server refresh, to provide a flexible core system for running even mission-critical applications.

"The way that business is operating IT is changing, especially because of virtualization and the cloud. It's moving away from the traditional three-tier model of compute, virtualization, and storage," says Chad Dunn, vice president of product management for VMware HCI products at Dell EMC. "By adopting the all-in-one model of a hyper-converged infrastructure, IT is able to free resources and realize cost savings for an increased focus on innovation and meeting business needs."
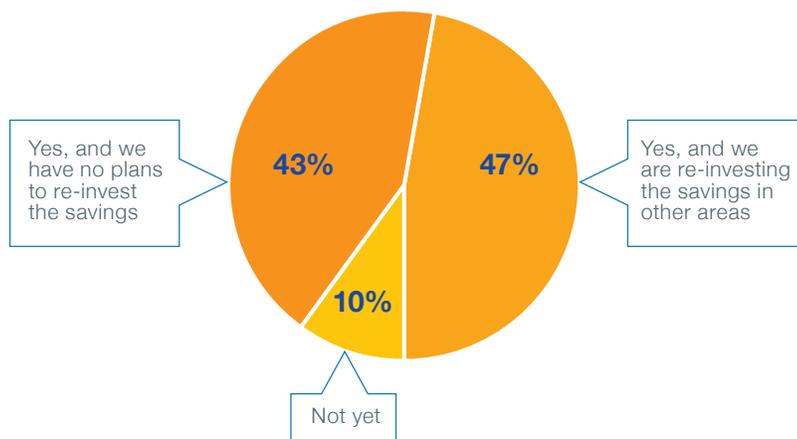
IT finds an answer in HCI

HCI integrates compute, software-defined storage (SDS), and networking functionality into hardware appliances that are pre-engineered, pre-validated, and ready to deploy. A hyper-converged system also uses a hypervisor for system, workload, and data management. The integrated HCI design helps IT efficiently and cost-effectively modernize data centers, break down silos of infrastructure complexity, and save time and resources for streamlined operations.

An additional benefit of integrated HCI systems is the end-to-end lifecycle management and

Cost savings of companies using HCI

43% — Yes, and we have no plans to re-invest the savings

47% — Yes, and we are re-investing the savings in other areas

10% — Not yet

IDG Research Services, February 2018

Dell EMC VxRail illustrates why companies are increasingly running the most demanding business-critical apps on HCI.

automation, which enable speed, scalability, and predictability in the data center to better serve business needs. Time-to-value of IT services also is accelerated because HCI is 73% faster to deploy than standard server infrastructures.[1]

The right HCI platform simplifies the entire system lifecycle from deployment to management, scalability, and maintenance. Additionally, the platform can operate as a single product, which eliminates the need to manage multiple infrastructure tiers and allows updates to be downloaded and installed as a single software package.

In the past, HCI was seen primarily as a solution to serve specialized IT needs. An initial use of HCI was to provide a separate "island" infrastructure, such as to deliver virtual desktop interface (VDI) or core infrastructure workloads for a special project, or to deliver new IT services. The second common HCI use case was to support remote office connectivity, especially for VDI deployments.

Today, IT departments are moving beyond that limited perception and deploying HCI more broadly, including to support multiple mission-critical workloads. Whether they are business-critical applications, core infrastructure, databases, or customer relationship management (CRM) systems, HCI solutions are now being used to support a wide variety of traditional and cloud-native workloads.

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1 IDC, The Business Value of Modernizing Infrastructure with Hyper-Converged Systems, http://www.emc.com/collateral/analyst-report/hci-business-value-wp-idc.pdf

Designed for the era of web-scale and cloud

HCI is a type of converged infrastructure that natively integrates compute, storage, and storage networking functions into a single appliance. HCI is based on a web-scale architecture designed to support public and private clouds with pooled hardware resources, workload adjacency, and a distributed file system or object store. HCI doesn't need to replace an existing converged infrastructure and HCI doesn't eliminate CI as a choice for IT.

Instead, both infrastructure architectures are valid options, but for distinct data center strategies. These factors will help in understanding the key differences:

- **HCI is completely software-defined;** memory, CPU, and other resources scale together.
- **CI does not support SDS,** so it may be the right solution for environments with known storage requirements.
- **HCI offers simpler deployment and management** because a single appliance integrates multiple, standardized functions.
- **CI maintains IT's familiar and established architecture** of separate resources for compute, storage, and networking.

"When you're moving from a traditional three-tier infrastructure, it's important to understand there isn't a straightforward translation from the existing environment," says Dunn. "One factor to help make the choice for new data center infrastructure is to look at each workload's requirements for memory and I/O. Then, look at how those requirements can be supported with the different performance characteristics of HCI and CI."

HCI is running business-critical applications

New research from IDG confirms that HCI is experiencing high levels of adoption. In a survey of IT executives, 85% indicate their companies already use or plan to use HCI, and 50% of current HCI users expect to expand their deployment.

But what types of applications are running on those HCI deployments? As a sign of confidence in the HCI approach, 50% of survey respondents are already running or planning to run finance, enterprise resource planning (ERP),

and other business-critical applications on HCI, and another 20% are considering HCI for running these applications.

Dell EMC VxRail illustrates why companies are increasingly running the most demanding business-critical apps on HCI. VxRail on the latest PowerEdge servers delivers up to two times more IOPS, with half the response times (up to 80% IO utilization).[2] It also offers greater all-flash and hybrid storage capacity and more GPU cards for increased graphics acceleration, while leveraging higher endurance and redundant boot devices.

The survey also found companies are using HCI for multiple application workloads, including collaboration and productivity, engineering and technical, big data and analytics, and remote-office computing.

Of course, the ability of the infrastructure to

> **The IDG Research Services survey confirmed that companies are realizing significant benefits from their HCI deployment.**

maintain strong security is a top concern for deploying any of these applications. The IDG survey found that, among companies that are already leveraging HCI, 57% see the avoidance of security risk due to improved data security and control as one of the most appealing benefits of HCI.

Putting HCI to work

The experiences of companies with existing HCI deployments show the potential use cases and business value.

For example, **Steinberg Diagnostic Medical Imaging** wanted to transform its data center infrastructure to sustain fast delivery times for data and images, reduce costs, and provide an outstanding patient experience. With Dell EMC HCI, the firm was able to consolidate applications and data on two servers, down from 90 servers previously deployed.

For **Land Rover BAR**, flexibility to serve the dynamic, real-time data and application workloads of an international sailing race was the goal in its data center. The company sponsored a yacht in the America's Cup race and needed to keep up with the changing information needs of the racing team. An HCI solution from Dell EMC allowed IT staff to activate new virtual machines in less than 15 minutes.

The construction firm **Cianbro** wanted to replace an outdated, tape-based service for remote backup to safeguard company data. Using Dell EMC HCI, the company has created its own remote and scalable backup site, gained stronger disaster recovery capabilities, and produced 80% savings in recurring monthly costs.

As a Dell EMC customer, **Rent-A-Center** wanted to integrate its server infrastructure with VMware virtualization solutions. By replacing an aging VDI infrastructure with HCI, the IT team is able to reduce its administrative burden and costs by reclaiming storage space. As the business expands, IT can also scale the infrastructure at an economical per-user cost.
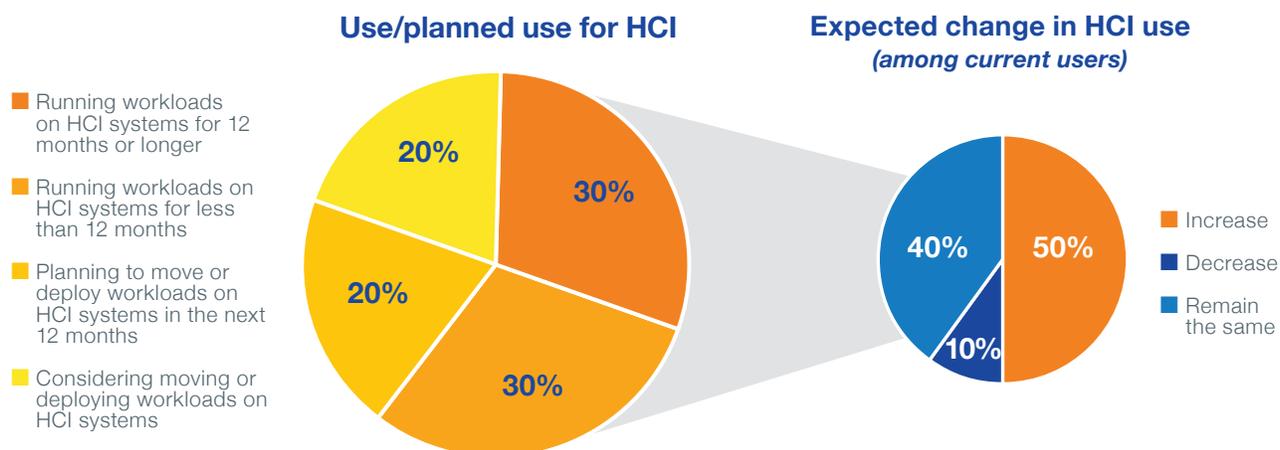
As organizations look to the cloud, leveraging on-premises infrastructure as a foundation to support consistent application performance is becoming a strong use case for HCI. The cloud architecture from Dell EMC allows cloud application workloads to run in containers on HCI, which manages allocation of compute and storage resources based on defined clusters or avail-

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☑ **Evaluation Factors for an HCI Solution**

When evaluating a hyper-converged infrastructure solution, look for the following features:

☐ Integrates compute, network, software-defined storage, and virtualization technologies into a single system

☐ Supports high performance and security levels for mission-critical applications

☐ Interoperates with cloud-based applications and infrastructure

☐ Makes infrastructure deployment simple and fast for easy scalability, operations, and management

☐ Defines features and functions in software to meet changing business needs

☐ Offers a single point of product support lifecycle management for IT cost efficiencies

☐ Provides a flexible platform for future technologies

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2 Based on internal lab testing, October 2017, comparing 12 VxRail P470F to 12 VxRail P570F nodes. Up to 80% IO utilization, based on Dell EMC lab testing, October 2017, comparing 12 VxRail P470F to 12 VxRail P570F nodes.

Use/planned use for HCI

■ Running workloads on HCI systems for 12 months or longer

■ Running workloads on HCI systems for less than 12 months

■ Planning to move or deploy workloads on HCI systems in the next 12 months

■ Considering moving or deploying workloads on HCI systems

20%
30%
20%
30%

Expected change in HCI use
(among current users)

40% **50%**
10%

■ Increase
■ Decrease
■ Remain the same

IDG Research Services, February 2018

It's clear from the IDG research results that HCI is now a mainstream technology for the modern data center.

ability zones. This on-premises platform enables rapid deployment of new applications for greater agility and efficiency.

HCI implementers are seeing results

The IDG Research Services survey confirmed that companies are realizing significant benefits from their HCI deployment, with the top four benefits listed as enhanced customer experience, improved productivity, increased efficiency, and lower costs.

A separate study conducted by the market-research firm IDC confirms improved application access for users, with 98% less downtime reported in HCI environments.[3] (Read the **IDC white paper.**)

The IDG Research results also uncovered that financial savings are a reality, with 90% of respondents reporting lower costs from HCI deployments. Nearly half of the IDG respondents say they are reinvesting those savings in new initiatives — such as big data and analytics, emerging technologies, and new product and service launches.

Cost savings were also noted in the IDC report. The analysts calculated an average benefit of $2.2 million per year for organizations using the Dell EMC solutions for HCI. Part of this value came from the average 83% less staff time[4] required to implement new business services with HCI. Overall, IDC reported 59% lower costs and a

619% return over five years for an investment in HCI solutions from Dell EMC.

HCI's time has come

It's clear from the IDG research results that HCI is now a mainstream technology for the modern data center.

IT organizations are looking beyond non-mission-critical use cases for HCI deployment. They are choosing HCI for the high value it delivers to simplify infrastructure deployment and management, make more use of cloud services, scale for more data, and better support business applications.

Learn more about the business value gained by users of hyper-converged systems: IDC white paper

Learn more about HCI solutions from Dell EMC at http://www.dellemc.com/ci.

About HCI solutions from Dell EMC
Dell EMC combines the simplicity, agility, and scalability of its industry-leading HCI portfolio with the power and flexibility of next-generation servers, designed and optimized for HCI. This offers greater performance and reliability to meet customer demands as HCI moves into core data centers and is relied on to run a wider range of applications and workloads. Learn more at **http://www.dellemc.com/ci.**

3, 4 IDC, The Business Value of Modernizing Infrastructure with Hyper-Converged Systems, http://www.emc.com/collateral/analyst-report/hci-business-value-wp-idc.pdf