WHITE PAPER

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THE READY-MADE DATA CENTRE

Converged infrastructure can greatly reduce the challenges of deploying advanced technologies.

EXECUTIVE SUMMARY Organizations are increasingly turning to the converged infrastructure architecture to achieve improved performance, business agility and cost savings. A converged infrastructure (CI) enables adopters to take virtualization to the next level by providing a ready-made package or reference architecture that makes it faster and easier to deploy an array of sophisticated new technologies.

A converged infrastructure helps an organization break down a siloed management approach inside the data centre. Enhanced management tools enable multiple IT teams and resources to cross-collaborate. **By flattening data centre architecture, the approach also offers a practical solution to efficiency-robbing silos,** allowing computing, networking and storage resources to be efficiently abstracted from CPUs, racks, cabling, controllers and switches.

Simply put, a converged infrastructure allows an organization to transform its data centre on its own terms, beginning or continuing its journey on the road to next-generation IT.

The Challenges of Advanced Technology

Data centre technologies are evolving at a rapid pace. Virtualization, automation, cloud computing, software-defined networking and a host of sophisticated applications are just a few of the solutions that can help organizations achieve a competitive advantage — as long as they have the resources needed to deploy them.

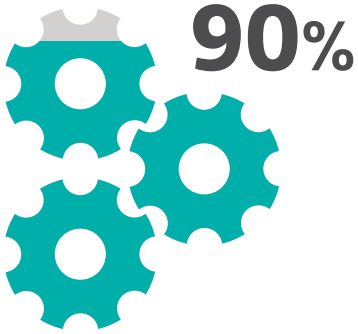
Traditional data centres are plagued by a host of inefficiencies that can impede or even prevent the adoption of increasingly essential advanced technologies. Aberdeen Group recently surveyed organizations on their top data centre and IT infrastructure pressures and found that leading concerns included aging infrastructure (40 percent), high capital costs (30 percent), high IT expenses (26 percent) and the long time needed to deploy devices (24 percent). A modern infrastructure can help an organization address all of these issues and many others, including:

IT sprawl: As a data centre evolves over time, many organizations slide into poor hardware resource utilization, inadequate system- and software-level security and wasted energy. A recent study by Jonathan Koomey of Stanford University and the Anthesis Group found that up to 30 percent of servers in data centres are "comatose" — drawing power but not generating any useful output.

IT complexity: Complexity is a fact of life in today's IT infrastructure. But sprawling data centres, that are pieced together over time with new technologies connected to older hardware via complicated workarounds and middleware, greatly increase this problem, hindering performance and growth.

Budget constraints: Newer data centre infrastructures that employ modern architectures operate far more efficiently than their older counterparts. Older data centres are commonly plagued by higher maintenance and energy costs, along with needless expenses that can seriously dent an organization's bottom line. Indeed, some experts estimate that 80 percent of IT spending goes toward maintaining legacy infrastructure.

Space limitations: As new technologies are periodically squeezed into an existing data centre, space becomes increasingly limited. This situation often leads to installation shortcuts and compromises. Over time, something has to give, often leading to compromises in performance, efficiency and reliability.



The percentage of organizations that have deployed converged infrastructure or are considering deployment[1]

Energy demands: Many older data centres are energy hogs, wasting power (and money) due to the use of less efficient IT equipment. They may also fail to take advantage of recent developments in power, cooling and other essential support services.

Personnel shortages: Inefficiently designed data centres require constant attention as IT administrators deal with poorly matched, configured and managed systems.

Lack of expertise: Many organizations have limited IT staff resources. Consequently, they may not have the experience to implement sophisticated next-generation IT projects in-house.

What Is a Converged Infrastructure?

To address the challenges posed by conventional data centre architectures, a growing number of organizations are turning to a converged infrastructure solution as a platform on which to build their data centres. A converged infrastructure integrates multiple IT technologies, such as servers, storage, networking equipment and software — as well as service and support — into a single, comprehensive solution.

According to a study published by Infiniti Research, the global market for converged infrastructure products is projected to

VDI AND CONVERGENCE

Many organizations recognize the benefits of a virtual desktop infrastructure (VDI), including improved security, simplified support and increased mobility. A major challenge to the deployment of a VDI is that the process is much more complex than providing users with a traditional desktop. An efficient converged infrastructure, however, can make VDI deployment much easier and faster while also improving the user's desktop experience through added performance and reliability.

Several converged infrastructure vendors have solutions tailored toward establishing a VDI. The solution comes preconfigured with the hardware and software needed to run virtual desktops.

Deploying a converged infrastructure provides numerous benefits, including simplified management through a single pane of glass. Because the system comes preconfigured, rollout is much quicker and requires far less work on the part of an organization's IT staff. A converged environment also boosts scalability. For example, when an entity needs to increase the number of desktops it runs beyond current capacity, a converged infrastructure simplifies scaling up and down to meet the needs of dynamic computing workloads.

Ultimately, converged infrastructure can lower the total cost of ownership of a VDI. HP estimates that a converged VDI rollout reduces desktop delivery costs by 50 percent.

[1]**SOURCE:** Zenoss, "The State of Converged Infrastructure," June 2014

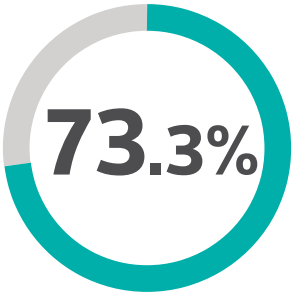
grow by more than 31 percent a year from 2014 to 2019.

One delivery model for CI involves preconfigured bundles of hardware and software. With this converged infrastructure approach, the vendor supplies an organization with specific storage, network, server and related technologies. The preconfigured components are integrated and standardized to help organizations achieve timely, repeatable, consistent deployments. The approach allows organizations to plan with accuracy their final deployment's parameters for power, floor space, usable capacity, performance and cost.

Another common delivery model is via a reference architecture (RA), a system design developed by a provider or an independent party. The RA documentation specifies which components to buy and how to connect and configure them for maximum performance. An RA provides a great deal of flexibility, since it allows organizations to freely mix and match hardware and software that meet the RA's specifications. This approach requires an organization's IT staff to pay close attention to details for optimal planning and deployment.

How Converged Infrastructure Can Simplify IT Deployment

Converged infrastructure solutions aggregate commonly deployed IT infrastructure components — servers, storage, networking, virtualization and software — into prepackaged systems. The approach speeds and simplifies IT deployments in numerous areas.



Percentage of organizations that report delivering better customer service with converged infrastructure[2]

Applications and platforms: Critical applications and platforms, such as Microsoft SharePoint and SAP Hana, demand high performance, high availability and strong security. Such deployments must also be able to seamlessly scale as an organization's needs evolve.

A converged infrastructure, designed from the outset to meet the needs of specific applications and platforms, incorporates computing, storage, network and other components and resources designed for maximum compatibility and performance with the goal of keeping essential services running seamlessly and smoothly.

For example, HP has created numerous converged products that are preconfigured, tested and validated for specific workloads. Its CloudSystem supports integrated solutions based on OpenStack software, while its Big Data System, intended for data analytics, is optimized for SAP Hana or the Microsoft Analytics Platform. HP also markets a Client Virtualization System intended for virtual desktop infrastructures.

EFFICIENCY BOOST

Children's Miracle Network (CMN) Hospitals greatly improved the efficiency of its data centre by deploying a converged infrastructure. The charity, which raises money and awareness for 170 member hospitals across the United States and Canada, wanted to increase its fundraising efforts and needed an IT infrastructure to match this growth.

CMN deployed a FlexPod converged infrastructure consisting of server virtualization software from VMware, Cisco Unified Computing System servers, Cisco Nexus switches and the NetApp clustered Data ONTAP 8.2 storage system.

The charity was able to deploy the converged solution far more quickly than a traditional data center setup. CMN also was able to reduce the number of physical servers in its data center from 24 to three and to shrink the time needed to deploy a new server from weeks down to a day.

"All of this made us a very agile organization," says Nick Ward, CMN's vice president of digital marketing. "Being agile as a nonprofit is very important."

Similarly, FlexPod, a converged infrastructure solution from Cisco and NetApp, comes in configurations specifically designed for private cloud deployments, Oracle software or SAP, as well as Microsoft SharePoint and Exchange.

VCE, a converged infrastructure consortium established by VMware, Cisco and EMC, has created converged reference architectures for specific purposes, including hybrid cloud, business intelligence and mission-critical applications such as enterprise resource planning and customer relationship management.

Deploying sophisticated applications and platforms often requires specialized knowledge that an organization's IT staff may not have. Offering a solution, a converged infrastructure, purposely designed for a specific technology deployment, can actually reduce the demands on IT professionals.

Server virtualization: A converged infrastructure takes server virtualization into a new world by tightly integrating, standardizing and optimizing both hardware and software. The approach also opens the door to the virtualization of network components and other IT technologies.

Prevalidated compatibility: An integrated infrastructure solution that has been prevalidated ensures that all hardware and software components have been extensively tested so that no incompatibilities exist within the system.

IT consolidation: According to a 451 Research study, when organizations reach 75 percent data centre utilization, they

→ *For more information on technologies that can improve your data center, read CDW's Data Centre Reference Guide.*

[2]**SOURCE:** Zenoss, "The State of Converged Infrastructure," June 2014

begin to evaluate the need for additional capacity. Sixty percent of these organizations then opt to consolidate their IT infrastructure. Converged infrastructure solutions combine hardware integration, software orchestration and other features into compact, holistic rack architectures that are designed to operate harmoniously. All of this is instrumental in consolidating data centre operations.

Simplified management: According to market research firm IDC, an IT operations team spends more than 70 percent of its time on day-to-day IT management operations — monitoring, troubleshooting, patching, updating and configuring resources.

A converged infrastructure allows organizations to automatically monitor, provision and troubleshoot across all elements of the system, leaving more time for focusing on mission-critical objectives.

Reduced real estate and energy footprints: A converged infrastructure lowers costs and reduces waste by requiring less space and energy.

Speedy deployment: With its "plug-and-play" approach, a completely configured converged infrastructure can be rolled out in far less time than a traditional data centre infrastructure, reducing the process from months or years to weeks or even days. Converged environments are also designed to make upgrades faster and easier.

A converged infrastructure creates a new level of flexibility, allowing a data centre to be sized and optimized to accommodate many different use cases.

Simplified support: Dealing with multiple vendors, who often blame each other when something goes wrong, is a major IT headache. An organization that deploys a converged infrastructure has to deal only with a single point of contact for service and support.

CDW: A Data Centre Partner That Gets IT

An organization considering the deployment of a converged infrastructure should find a partner that can support optimal solution planning, operation and management.

CDW maintains strong partnerships with industry-leading vendors in every area of infrastructure convergence to help organizations of all types assess their needs and evaluate a variety of options.

With its experienced and industry-certified solution architects, CDW can recommend a customized path leading to efficient and cost-effective infrastructure convergence.

For more information on how to get started with converged infrastructure, contact your CDW account manager, call 800.972.3922 or visit CDW.ca/datacentre.

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