

# Using hyperconvergence to optimize and improve the VDI experience

Virtual desktop infrastructure holds tons of promise for IT organizations, but many organizations were less than satisfied with early solutions' performance and user experience. But that's changing — fast. The combination of new VDI software platforms and modernized hyperconverged infrastructure appliances are rewriting the rules of the game for IT.

## Where to go

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## Introduction

Two fast-growing technologies — hyperconverged infrastructure (HCI) and virtual desktop infrastructure (VDI) — are transforming how IT supports critical business initiatives. Individually, each represents a big leap forward in achieving the cost efficiency, scalability and agility demanded by organizations. Global HCI sales are expected to skyrocket by more than 43% annually by 2022, with total revenues exceeding \$12.6 billion.<sup>1</sup> And VDI revenues will experience a compound annual growth rate of more than 27% between 2016 and 2022.<sup>2</sup>

By deploying HCI and VDI in concert, however, many enterprises are looking for synergistic operational improvements created by combining modernized infrastructure with a scalable, reliable and efficient VDI software platform.

This has become a prerequisite for many IT organizations as they strive to reduce complexity, minimize risk, deal with the reality of leaner IT staff resources and cope with tighter budgets, particularly capital expenditures. Without a seamless integration of HCI and VDI, organizations will stumble in their attempts to transform IT platforms, deploy staff for strategic initiatives and increase the agility necessary to improve their competitive position.

Of course, there is an 800-pound gorilla in the room: Many early VDI deployments — those typically done in the past decade — failed to deliver on their early promises. Too many IT executives still remember boot storms bringing VDI performance to a crashing halt, either due to early VDI design inefficiencies or their legacy hardware's inability to handle dramatic workload demand spikes.

The spike in mobile usage — and users' desire to access important data and applications from their mobile devices — also presented unique challenges in initial VDI deployments. Trends such as virtual workforces, bring your own device (BYOD) policies and the threat of lost physical devices all contributed to IT and security professionals' desire to keep important information within highly secure on-premises infrastructure, and to only display data on mobile devices.

Fortunately, new HCI appliances and redesigned software are the primary reasons many organizations are stepping up their evaluations and deployments of VDI.

This paper looks at what has changed to make VDI a more efficient, reliable and scalable solution, even for the often-unpredictable workload demands that in the past strained performance and impacted user experience. It also closely examines how a new breed of HCI appliances are easing both deployment and ongoing operations of VDI, and offers some concrete ideas on what IT decision makers should look for when it comes to the ideal HCI/VDI solution.

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### Achieving a superior VDI user experience

To meet the increasingly complex and demanding needs of users for high performance in virtualized environments, hardware and software vendors have stepped up their collaboration on next-generation HCI appliances and VDI software platforms.

These solutions are addressing historical VDI challenges around performance and user experience, in large part, based on lessons learned from earlier implementations. Some of the “new realities” IT organizations and their technology partners have embraced include:

- Experience has taught customers and vendors about the realities of boot storms and other catalysts of demand spikes that impact performance.
- New architectures are essential to allow organizations to make more efficient buying decisions, including avoiding overprovisioning hardware and software licenses.
- New hardware choices are required to optimize for variable demand workloads like VDI.
- Organizations are anxious to reduce “day zero” activities that take up tons of IT time and resources, such as setup, testing, validation and installation.
- Easier management that reduces the impact on IT staff and budgets is imperative for realizing the full potential of VDI.

### What to look for in HCI for VDI workloads

Unfortunately, the term “hyperconvergence” has become a marketing buzzword. Not every supplier purporting to offer an HCI solution actually meets the most commonly understood requirements of hyperconvergence, such as:

- Merging compute, storage and networking infrastructure into a single tier, usually implemented as an appliance form factor;

- Using a virtualization hypervisor to aggregate performance among nodes; and
- Leveraging a unified, automated management framework, typically described as “single pane of glass” management.

A fully delivered appliance with preinstalled software enables a faster time to market and comes with less risk than building from a reference architecture.

If your organization experienced less-than-satisfactory performance with an earlier HCI deployment, chances are you encountered performance problems when the need to scale the infrastructure became more and more pronounced. In fact, performance-at-scale is probably the single most important requirement in a VDI-optimized HCI appliance.

It's a good idea to look for a solution that enhances more efficient and reliable performance at scale by adding HCI nodes, rather than trying to tack hundreds or even thousands of new seats onto legacy infrastructure. For instance, it's much easier to ensure specified performance levels for 100 seats than it is for 10,000 seats. But as your organization grows and more users' clients need to be virtualized, high performance is easier to achieve by adding more inexpensive, easily deployed nodes optimized for a smaller number of seats per node, rather than lumping more and more users onto a single server node.

Small, energy-efficient and pretested HCI appliances are easy to deploy, allowing IT organizations to support more virtual desktops faster and with less hands-on management and performance tuning.

Additionally, it makes sense to envision VDI-based HCI appliances not only as a way to virtualize infrastructure, but also to virtualize applications. In fact, it's useful to think of VDI as “client virtualization,” because it can virtualize both physical client devices and the essential applications necessary for users to do their work. Virtualized applications help organizations improve security — since users don't have the actual applications on their machines — as well as ensure a smaller management footprint for end-user devices, whether those are desktops, notebooks, tablets or even phones. It also significantly cuts down on capital expense by reducing hardware purchases and significantly limiting software subscription fees.

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## Technology matters

Lenovo and Nutanix have implemented a tight collaboration of development, deployment, sales and support resources that avoids finger-pointing between hardware and software companies that can seriously impact customers' IT and business operations.

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**Lenovo Converged HX Series of appliances are offered in a wide range of configurations and functionality, optimized for an array of different workloads such as VDI.**

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## HCI solutions from Lenovo — optimized for Nutanix VDI

Because there is a wide range of different HCI solutions in the market — and trying to compare them on an apples-to-apples basis can be challenging — selecting the right hyperconverged solution for VDI workloads means doing your homework.

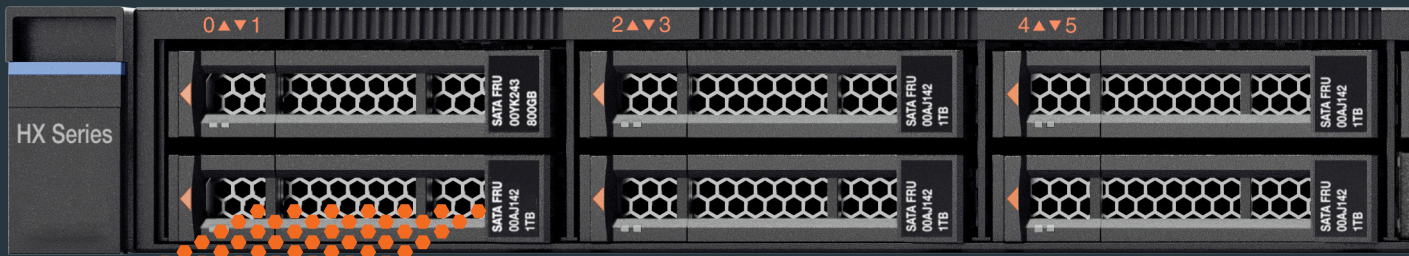
Fortunately, analyst firms such as Technology Business Review (TBR) and Information Technology Industry Consulting (ITIC) have conducted extensive user research that has given extremely high marks to Lenovo for its server solutions. In fact, ITIC's 2015 server reliability study said Lenovo x86-based servers had the highest uptime and availability in their class<sup>3</sup>, while TBR's research cited Lenovo for the highest customer satisfaction ratings.<sup>4</sup>

The Lenovo Converged HX Series of appliances are offered in a wide range of configurations and functionality, optimized for an array of different workloads such as VDI. These include:

- HX 1000 Series for remote office/branch office
- HX 2000 Series for small and mid-sized businesses
- HX 3000 Series for a wide range of virtualization workloads, including VDI
- HX 5000 Series for big data
- HX 7000 Series for databases and high-performance computing

The Lenovo-Nutanix relationship differs from that of most other HCI partnerships because it is more than a straightforward, traditional OEM licensing agreement. The Lenovo-Nutanix alignment is a true strategic partnership, based on a common vision for the rapidly evolving data center shaped by improved efficiency and increased agility.

Lenovo and Nutanix have implemented a tight collaboration of development, deployment, sales and support resources that avoids finger-pointing between hardware and software companies that can seriously impact customers' IT and business operations. It is this partnership for a full ecosystem of development, implementation and support that enables substantially improved and more predictable, sustainable VDI performance.



Lenovo's long-established history of hardware engineering excellence, combined with Nutanix's breakthrough VDI software, provides customers with maximum flexibility in selecting the best HCI solution for their unique workload requirements and budget constraints.

### Conclusion

Like just about every technology after its initial shakeout period, VDI has made great strides in confronting and overcoming early hiccups and user disappointments. Today's VDI offers the higher performance necessary for peak workloads and unexpected demands, as well as improved availability and an enhanced user experience.

Modern VDI software solutions can be optimized with HCI appliances. Today's HCI appliances cut capital expenditures, improve manageability and offer fast, affordable and reliable scalability — all without compromising users' ever-escalating performance requirements.

Lenovo's Converged HX Series appliances, designed specifically for use with Nutanix's market-leading VDI software, have been cited by numerous analyst firms for high reliability, sustainable performance and a superior user experience. Specifically engineered for today's more demanding VDI workloads, Lenovo's Converged HX Series appliances emphasize fast deployment and sustainable performance even under unexpected demand spikes.

For more information about the Lenovo Converged HX Series with integrated software from the market leader in hyperconvergence, Nutanix, please go to [www.lenovo.com/hyperconverged](http://www.lenovo.com/hyperconverged), or contact Lenovo on Twitter: @LenovoServers.

1 "Hyper-Converged Infrastructure Market by Hypervisor (VMware, KVM, Hyper-V), Application (Virtual Desktop Infrastructure, Server Virtualization, Robo, Data Protection and Cloud), Vertical & Geography - Global Forecast to 2022," Research and Markets, June 2016.

2 "Global virtual desktop infrastructure market 2016-2020," Technavio, January 2016.

3 "Annual ITIC 2015-2016 Reliability Survey," ITIC, July 2015.

4 "Quarterly TBR Customer Satisfaction Survey," Technology Business Review, February 2016.

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