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## Highlights

- Achieve up to 83 percent reduction in design, deployment and management overhead by standardizing on repeatable, consistent processes and templates for infrastructure and management
  - Lower total cost of ownership (TCO) based on simplified architecture and validated design that can reduce deployment time, increase asset utilization and reduce capital and operating expenses
  - Reduce power and cooling costs up to 49 percent
  - Reduce cabling by as much as 78 percent
  - Scale rapidly with infrastructure automation and a simplified, validated architecture
  - Rely on world-class support from IBM Global Services across a broad range of services
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## The converged cloud

*VersaStack with IBM FlashSystem A9000 makes infrastructure easy, efficient and versatile*

Cloud-savvy IT decision-makers understand that cloud computing is different from traditional IT. The cloud requires multi-tenancy and quality-of-service (QoS) capabilities. It also must scale more flexibly and quickly than most conventional IT delivery models. Today, data centers typically include hybrid cloud on-premises and off-premises components, so your solution must include appropriate connectivity and management features.

At the same time that cloud is sweeping the IT landscape, so is another powerful new trend—converged infrastructure. Converged or integrated infrastructure solutions integrate compute, networking and storage into one system with the goal of delivering deployment-ready platforms. According to IT analyst firm ESG, more than half of all enterprises plan to deploy some form of converged infrastructure in the near future and nearly a third have already done so.<sup>1</sup>

Converged infrastructure and cloud computing make a combination that are ever more attractive to enterprises looking to lower IT costs, simplify business-critical systems, increase their ability to innovate and respond swiftly to market forces—and, of course, capture and keep competitive advantage. IBM and Cisco have responded to this 21st-century set of requirements by introducing a new cloud-optimized converged infrastructure solution powered by VersaStack™ and IBM® FlashSystem®.

### VersaStack

Jointly developed by IBM and Cisco, the VersaStack solution brings together the Cisco Unified Computing System (Cisco UCS) integrated infrastructure (which includes Cisco UCS servers, Cisco Nexus switches and Cisco UCS Director management software) with market-leading IBM Storwize® and IBM FlashSystem all-flash storage.



## IBM Systems Solution Brief

VersaStack supports varied Cisco UCS servers, Cisco switches (Nexus and Cisco MDS) and IBM storage configuration options that enable you to easily and cost-effectively scale compute, network or capacity as needed. VersaStack offers many benefits:

- Up to 83 percent reduction in design, deployment and management overhead through use of repeatable, consistent processes and templates across standardized infrastructure and management
- Lower total cost of ownership (TCO) based on simplified architecture and validated design that can reduce deployment time, increase asset utilization and reduce capital and operating expenses
- Up to 49 percent reduction in power and cooling costs and up to 78 percent reduction in cabling
- Rapid scalability of the platform through infrastructure automation and a simplified, validated architecture
- World-class support from IBM Global Services across a broad range of services, including strategy, architecture, design, planning, implementation and management

### IBM FlashSystem

One of the newest members of the IBM FlashSystem portfolio, IBM FlashSystem A9000 is purpose-engineered to extend IBM FlashSystem leadership to hybrid cloud workloads, big-data analytics, virtual desktop and converged infrastructure environments at the largest scales. IBM FlashSystem A9000 integrates the extreme performance of IBM FlashCore™ technology, highly parallel architecture and comprehensive data reduction in one modular system.

IBM FlashSystem A9000 is built using IBM Spectrum Accelerate™ software-defined storage technology. IBM Spectrum Accelerate offers a mature set of storage services that have been developed with cloud, virtualized and converged infrastructure environments in mind. Thanks to the combination of this software foundation with patented IBM hardware architecture, this solution provides cloud-critical functionality, including:

- IBM FlashCore technology to ensure consistent and predictable microsecond response times
- IBM Hyper-Scale technologies to simplify growth and storage management
- A brand new flash-optimized data reduction suite to enhance storage economics
- Secure multi-tenancy and QoS features to prevent “noisy neighbors”



The VersaStack solution

IBM FlashSystem A9000 comes with a flash-optimized data reduction and efficiency suite that maximizes storage economics and creates many synergies within VersaStack solutions. The storage system uses a pattern database to quickly look up and remove common, known patterns from incoming input/output (I/O)—then, the global data deduplication process occurs inline and upfront, rather than requiring already stored data to be scrubbed—a step that can threaten system performance. The inline compression solution leverages a new, proprietary algorithm that can produce extraordinary results in just one cycle. All IBM FlashSystem grid controllers come with data reduction hardware acceleration cards that speed up compression. Finally, IBM thin provisioning and redirect-on-write snapshots produce better results by breaking data into smaller units and managing them at a more granular level.

These features complement one another to support 250 microsecond response times with full data reduction enabled. This consistent microsecond latency is achieved because the processing of pattern removal, deduplication and compression is distributed across the grid architecture and across all IBM FlashSystem resources.

With IBM FlashSystem A9000, enterprises can deploy and manage cloud-optimized converged infrastructures, lower storage costs, dramatically increase system performance,

quickly and easily integrate all-flash storage with converged systems, choose a VersaStack consumption model and implement solutions with many competitive advantages.

### Combined performance

IBM FlashSystem A9000 extends VersaStack capabilities and benefits into cloud and hybrid cloud storage environments. The IBM Spectrum Accelerate technology engineered into this IBM FlashSystem platform provides a wide range of critical storage functionality, including multi-tenancy and QoS management features, comprehensive data reduction, and connectivity and integration with many IBM SoftLayer® cloud services and IBM Spectrum Storage™ software-defined infrastructure offerings. Leveraging these IBM FlashSystem advantages, you can quickly implement VersaStack-based solutions that enable nearly unlimited, simplified capacity provisioning and scalability; lower overall IT costs; and multiply storage services and functionality—all managed from one innovative user interface.

Any enterprise looking to take advantage of both converged infrastructure and hybrid cloud storage in one integrated system should strongly consider a VersaStack and IBM FlashSystem solution. One of the many common workloads moving to a cloud environment is virtual desktop infrastructure (VDI). VDI requirements dovetail nicely with many of the features offered by IBM FlashSystem A9000:

- VDI presents challenging, random and unpredictable I/O patterns to the back-end storage. The IBM FlashCore technology in IBM FlashSystem arrays is designed specifically to provide consistent high performance in these environments.
- VDI rollouts don't succeed unless they achieve at least the responsiveness of the replaced conventional desktops. IBM FlashSystem A9000 can provide 250 microsecond latency, even through the full suite of inline data reduction.
- VDI solutions generate highly redundant data sets, from heavily replicated desktop images to company-wide emails. The multi-layered data reduction provided by these IBM FlashSystem platforms performs especially well in VDI environments and multiplies the efficiencies and cost savings created by VersaStack.
- VDI often suffers from complex, costly and problematic implementations, especially as the scale and geographic diversity grows. VersaStack with IBM FlashSystem provides an ideal antidote—a simplified, integrated infrastructure that's easy to install and offers plenty of scalable performance.



IBM FlashSystem A9000

### Cloud synergy

Converged infrastructure and cloud computing are two of the hottest trends in IT these days for good reason—they help transform the cost and complexity associated with 21st-century technologies such as big-data analytics, the Internet of Things, VDI, and mobile and social systems of engagement into business value. The dynamic performance of IBM FlashSystem A9000 combined with the ease, efficiency and versatility of VersaStack create cloud deployments that are easy to install, easy to afford and very friendly to business innovation.

Feature	Benefits
<b>Inline data compression at I/O level</b>	<ul style="list-style-type: none"><li>• Maximizes storage space efficiency without requiring system slow-downs to scrub and compress stored data</li></ul>
<b>IBM FlashCore technology</b>	<ul style="list-style-type: none"><li>• Provides consistent, predictable microsecond response times suitable for Virtual Desktop Infrastructure (VDI) and other demanding cloud applications</li></ul>
<b>Cisco UCS Integrated Infrastructure</b>	<ul style="list-style-type: none"><li>• Enables you to easily and cost-effectively scale compute, network or capacity as needed. with Cisco UCS servers, Cisco Nexus switches and Cisco UCS Director management software</li></ul>

## Why IBM?

Building on decades of storage leadership, IBM offers a comprehensive portfolio of integrated, flash-optimized storage solutions that can propel organizations into the next era of IT. These proven, easily integrated flash solutions accelerate critical applications for faster decision making, come with best-in-class reliability and deliver new efficiencies across the entire business environment for a faster return on investment. IBM flash storage solutions can provide enterprises with the application performance they need to compete, innovate and grow.

Innovative technology, open standards, excellent performance, and a broad portfolio of proven storage software, hardware and solutions offerings—all backed by IBM with its recognized industry leadership—are just a few of the reasons to consider storage solutions from IBM. In addition, IBM delivers some of the best storage products, technologies, services and solutions in the industry without the complexity of dealing with different hardware and software vendors.

## For more information

To learn more about IBM storage solutions, including the VersaStack solution and IBM FlashSystem A9000, please contact your IBM representative, or visit: [ibm.com/storage](http://ibm.com/storage)

Additionally, IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. We provide full lifecycle management of IT products and services, from acquisition to disposition. For more information, visit: [ibm.com/financing](http://ibm.com/financing)



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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

<sup>1</sup> Adam DeMattia, “Economic Value Validation, Quantifying the Value of VersaStack, a Converged Infrastructure Solution by IBM and Cisco,” *Enterprise Strategy Group (ESG)*, April 2016.  
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