



# IBM Storwize V7000 Unified Disk System

*The most powerful and easy-to-use innovative disk system in the storage marketplace*

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## Highlights

- Delivers sophisticated enterprise-class storage function for businesses of all sizes
  - Supports your growing business requirements while controlling costs
  - Provides up to 200 percent performance improvement with automatic migration to high-performing SSDs<sup>1</sup>
  - Consolidates block and file storage in a single system for simplicity and greater efficiency
  - Enables near-continuous availability of applications through dynamic migration
  - Supports faster and more efficient data copies for online backup, testing or data mining
  - Offers flexible server and storage management
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In storage management today, breaking the cycle of increased complexity and explosive data growth can be a big challenge. The old ways of buying and managing storage have become less effective. Due to resource constraints—both physical storage resources and human resources—IT organizations must act quickly to optimize and simplify their infrastructure. Unchecked complexity and growth will only become bigger problems over time.

Small and midsize organizations may also suffer from a range of challenges:

- Disruptive migrations
- Difficulty deploying tiered storage
- Inability to share storage among servers
- Reduced productivity and increased cost caused by isolated server and storage management tools
- Inability to use virtualized storage, like virtual servers, as a tool for optimizing expenditures, resources and capabilities

To stand up to these challenges and allow businesses to respond to a rapidly changing marketplace, IBM® Storwize® V7000 Unified is a virtualized storage system to complement virtualized server environments that provides unmatched performance, availability, advanced functions





and highly scalable capacity never seen before in midrange disk systems. Storwize V7000 Unified is a powerful midrange disk system that has been designed to be easy to use and enable rapid deployment without additional resources. Storwize V7000 Unified consolidates block and file workloads into a single storage system for simplicity of management and reduced cost. Storwize V7000 Unified is virtual storage that offers greater efficiency and flexibility through built-in solid state drive (SSD) optimization and thin provisioning technologies. Storwize V7000 Unified advanced functions also enable nondisruptive migration of data from existing storage, simplifying implementation and minimizing disruption to users. Storwize V7000 Unified also enables you to virtualize and reuse existing disk systems, supporting a greater potential return on investment (ROI).

### **Managing the information infrastructure**

The need to increase storage efficiency has led many IT organizations to turn to consolidation, virtualization and automated tiering to reduce capital and operational expenses. IBM offers solutions today that can become part of your highly efficient,

highly capable, next-generation information infrastructure, whether your storage environment supports a small or midsize organization or a large, complex data center.

### **Consolidation**

Optimizing resources through consolidation can reduce costs and improve productivity. Consolidation can also lead to more efficient maintenance and management of your information infrastructure. By enabling you to scale storage efficiently, consolidation can deliver the capacity you need within the budget you have for the performance you want.

### **Virtualization**

Virtualizing your storage infrastructure can optimize your expenditures, resources and capabilities. It allows you to scale system capacity and performance more easily to meet your growing information infrastructure needs, reduce the complexity of management and reduce the risk to your business of system failure. In server environments, virtualization technologies are often used to improve server utilization, reduce complexity, speed provisioning, consolidate application migration and provide improved flexibility in disaster recovery plans. Storage virtualization is designed to provide similar advantages for your storage environment. Combining storage and server virtualization can build a more powerful virtualized infrastructure for your business and provide greater benefits than either virtualization solution deployed alone.

Support for VMware vStorage APIs enables Storwize V7000 Unified to take on some storage-related tasks that were previously performed by VMware, which helps improve efficiency and frees up server resources for other more mission-critical tasks.



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### Tiering

Tiering optimizes storage by enabling data to be located in a way that can improve system performance, reduce costs and simplify information management. Tiering can enhance performance and reduce operating expenses by automating data movement. And tiering allows you to scale storage performance based upon your business needs. Using IBM System Storage® Easy Tier™ technology, you can deploy SSDs confidently, effectively and economically by automatically and dynamically moving only the appropriate data to the SSDs in the system, based on ongoing performance monitoring. Such effective storage tiering enables users to enjoy the performance

benefits of SSDs without requiring administrators to create and manage storage tier policies. It does so without the excessive costs associated with placing too much of the wrong data on these relatively expensive drives. With a wide range of disk drives and SSDs, Storwize V7000 Unified provides the ability to optimize a tiered storage configuration to meet diverse application requirements.

### Introducing Storwize V7000 Unified

Storwize V7000 Unified is a powerful storage system that combines hardware and software components to provide a single point of control to help support improved storage efficiency. By enabling virtualization, consolidation and tiering in business of all sizes, it is designed to improve application availability and resource utilization. The system offers easy-to-use, efficient and cost-effective management capabilities for both new and existing storage resources in your IT infrastructure.

Storwize V7000 Unified combines together a variety of IBM technologies including thin provisioning, automated tiering, storage virtualization, clustering, replication, multi-protocol support and a next-generation graphical user interface (GUI). Together, these technologies are designed to enable Storwize V7000 Unified to deliver extraordinary levels of storage efficiency.

### Enhancing access with Easy Tier

Easy Tier provides automatic migration of frequently accessed data to high performing SSDs, enhancing usage efficiencies. Operating at a fine-grained granularity, the Easy Tier function automatically repositions pieces of the data to the appropriate class of drives based on I/O patterns and drive characteristics with no further administrative interaction.

Easy Tier makes it easy and economical to deploy SSDs in your environment. A hybrid pool of storage capacity is created containing two tiers: SSD and hard disk drive (HDD).

- The busiest portions of volumes are identified and automatically relocated to high-performance SSDs.
- Remaining data can take advantage of higher capacity, price-optimized drives for the best customer value.

Volumes in an SSD- or HDD-managed disk group are monitored and can be managed automatically or manually by moving hot extents to SSD and cold extents to HDD.

With an online database workload, Easy Tier improved throughput up to 200 percent and reduced transaction response time by up to 30 percent compared to a configuration using only HDD.

#### **Using thin provisioning to optimize efficiency**

Using thin provisioning, applications consume only the space they are actually using, not the total space that has been allocated to them. Designed to keep business overhead low, thin provisioning optimizes efficiency by allocating disk storage space in a flexible manner among multiple users, based on the minimum space required by each user at any given time. This reduces use of storage hardware but also can save electrical energy use, lower heat generation and reduce hardware space requirements.

For example, a database might be planned to grow to 100 TB but is only 10 TB today. Using thin provisioning, a storage administrator can allocate 100 TB of virtual capacity to meet expected future requirements while consuming only 10 TB of

physical capacity. As the database grows, Storwize V7000 Unified allocates additional physical capacity as required. This approach minimizes the amount of physical capacity consumed and helps enable a more efficient approach to storage purchases while also minimizing future configuration changes as the database grows.

#### **Avoiding disruptions with dynamic migration**

Storwize V7000 Unified uses virtualization technology to help insulate host applications from physical storage changes. This ability can help enable applications to run without disruption while you make changes to your storage infrastructure. Your applications keep running so you can stay open for business.

Moving data is one of the most common causes of planned downtime. Storwize V7000 Unified includes a dynamic data migration function that is designed to move data from existing storage into the new system or between arrays in a Storwize V7000 Unified system, while maintaining access to the data. The data migration function might be used, for example, when replacing older storage with newer storage, as part of load balancing work or when moving data in a tiered storage infrastructure.

Using the Storwize V7000 Unified dynamic migration capabilities can provide efficiency and business value. Dynamic migration can speed time-to-value from weeks or months to days, minimize downtime for migration, eliminate the cost of add-on migration tools, and may help avoid penalties and additional maintenance charges for lease extensions. The result can be real cost savings to your business.

## **Consolidating data for efficiency and simplicity**

Many users have deployed storage area network (SAN) attached storage for their applications requiring the highest levels of performance while separately deploying network attached storage (NAS) for its ease of use and lower cost networking. This divided approach adds complexity by introducing multiple management points and also creates islands of storage that reduce efficiency.

Storwize V7000 Unified provides the ability to combine both block and file storage into a single system. By consolidating storage systems, multiple management points can be eliminated and storage capacity can be shared across both types of access, helping to improve overall storage utilization. Storwize V7000 Unified also presents a single, easy-to-use management interface that supports both block and file, helping to simplify administration further.

Storwize V7000 Unified builds on the high-performance design of the Storwize V7000 system and integrates proven IBM software capabilities to deliver new levels of efficiency. The system includes IBM Active Cloud Engine™, which is designed to deliver policy-based management of files to reduce costs through use of tiered storage and improve data governance. For example, Active Cloud Engine policies can be used to move less frequently used data to lower cost tiers of storage, including tape in an IBM Tivoli® Storage Manager system. Active Cloud Engine policies can also be used to delete unwanted or expired data automatically.

Storwize V7000 Unified integration with McAfee and Symantec Antivirus is designed to provide the ability to isolate or delete compromised files, and leverage the most commonly deployed ISV antivirus applications.

## **Foundation for cloud deployments**

Improving efficiency and delivering a flexible, responsive IT infrastructure are essential requirements for any cloud deployment. Key technologies for delivering this infrastructure include virtualization, consolidation and automation.

With its virtualized storage design and tight affinity with technologies such as IBM PowerVM™ and VMware, Storwize V7000 Unified is the ideal complement for virtualized servers that are at the heart of cloud deployments. Storwize V7000 Unified helps enable consolidation of multiple storage systems for greater efficiency and clustered systems drive the value of consolidation even further. Automated tiering technologies such as Easy Tier, Active Cloud Engine and Tivoli software help make the best use of the storage resources available.

## **Protecting data with replication services**

Storwize V7000 Unified includes a rich IBM FlashCopy® function that is designed to create an almost instant copy of active data, which can be used for backup purposes or for parallel processing activities. Up to 256 copies of each volume may be created.

When combined with Storwize V7000 Unified thin provisioning, you can create copies using only a fraction of the amount of storage needed for a full physical copy. This type of copy, called a “snapshot,” is designed to help improve overall storage utilization and reduce the amount of capacity required for copies.

IBM Tivoli Storage FlashCopy Manager is designed for today's business world, where application servers are operational 24 hours a day—yet data must remain fully protected. If you have a 24x7 environment, you can't afford to lose any data. You also can't afford to stop critical systems for hours so you can protect the data adequately. FlashCopy Manager exploits the Storwize V7000 Unified snapshot capabilities to provide high-speed, backup and restore functionality with low impact to applications. Automated policy-based management of multiple snapshot backup versions, combined with a simple and guided installation and configuration process provide an easy-to-use and quick-to-deploy data protection solution that enables the most stringent database recovery time requirements to be met. FlashCopy Manager can help deliver the highest levels of protection for mission critical IBM DB2®, SAP, Oracle, Microsoft Exchange and Microsoft SQL Server applications through integrated application-aware snapshot backup and restore capabilities. Custom application support offers the ability to extend FlashCopy Manager capabilities to any application on IBM AIX®, Linux and Solaris.

The Metro Mirror and Global Mirror functions operate between Storwize V7000 Unified systems at different locations to help create copies of data for use in the event of a catastrophic event at a data center. For even greater flexibility, Metro Mirror and Global Mirror also support replication between Storwize V7000 Unified systems and a wide variety of storage systems supported by System Storage SAN Volume Controller. Metro Mirror is designed to maintain a fully synchronized copy at "metropolitan" distances (up to 300 km) whereas Global Mirror is designed to operate asynchronously and so helps maintain a copy at much greater distances (up to 8000 km). Both functions are designed to support VMware

vCenter Site Recovery Manager to help speed disaster recovery. Enhancements to Global Mirror are designed to provide new options to help administrators balance network bandwidth requirements and recovery point objectives for applications, helping to reduce operating costs for disaster recovery solutions.

IBM Tivoli Storage Manager FastBack® provides an additional complementary capability to replicate highly-efficient deduplicated snapshots over TCP/IP connections to a remote FastBack Disaster Recovery hub, efficiently storing the disaster recovery DR snapshots on a Storwize V7000 Unified. This option helps provide a lower cost approach to delivering effective disaster recovery capability.

For NAS data, Storwize V7000 Unified offers data protection through a space-efficient file system and fileset-level snapshots (up to 256 per file system). Snapshots of a fileset provide a way to partition the namespace into smaller, more manageable units. File snapshots protect against accidental deletion or modification of files and that enable you to restore at the file level. The system also provides asynchronous replication for disaster recovery and business continuity. In addition, asynchronous replication offers encrypted file replication over extended distances between two sites. This function is integrated with IBM Active Cloud Engine, which can provide a high-speed scan of the source file system to determine files and directories that have been created, modified or deleted. The replication is performed by an "rsync" tool created by IBM that can move only the changed portions of files to a destination, offering network savings.

Storwize V7000 Unified has specific exploitation and integration with IBM Tivoli Storage Manager to provide efficient and extremely fast backup and restore processes, and the movement of files to external disk or tape. In addition, Storwize V7000 Unified provides support for the Network Data Management Protocol (NDMP) to provide full and incremental backup of files as well as restoring of these files and related file system data. Support for NDMP allows for backing up Storwize V7000 Unified with third-party backup applications over the LAN.

### **Leverage proven ISV solutions**

IBM is committed to continuous improvement and seamless application integration to optimize your business results and minimize time-to-value. Our commitment is visible through ongoing work and enduring partnerships with ISVs such as Microsoft, Oracle, SAP, Symantec and VMware.

Combining Storwize V7000 Unified with leading ISV applications can provide increased flexibility and deliver a more robust information infrastructure for your business. Solutions have been qualified for Storwize V7000 Unified for select applications that focus on key solution areas, including backup/restore, disaster recovery, clustering, server virtualization and database and performance optimization. IBM is also committed to certifications with key ISVs aligned with various industries including healthcare, financial services, telecommunications and the public sector.

### **Integrated management**

This solution provides a tiered approach to management designed to meet the diverse needs of different organizations. The Storwize V7000 Unified management interface is designed to give administrators intuitive control of the system

and provides a single integrated approach for managing both block and file storage requirements in the same system. For organizations looking to manage both physical and virtual server infrastructures and the storage they consume (including provisioning and monitoring for higher availability, operational efficiency and infrastructure planning) Storwize V7000 Unified is integrated with IBM Systems Director Storage Control. A single administrator can manage and operate IBM servers (IBM System x®, IBM Power Systems™ and IBM BladeCenter®) along with networking infrastructure and IBM storage (including Storwize V7000 Unified) from a single management screen. For organizations looking to improve the operational efficiency of storage specialists, Tivoli Storage Productivity Center is designed to provide a SAN-wide perspective of storage health, I/O path performance analytics and capacity use for Storwize V7000 Unified and the surrounding storage infrastructure. Plug-ins to support Storwize V7000 Unified with Microsoft System Center Operations Manager (SCOM) and VMware vCenter help enable more efficient consolidated management in these environments.

A new performance dashboard provides at-a-glance access to key high-level real-time system performance information, which helps monitor and optimize the virtualized environment. IBM Tivoli Storage Productivity Center provides access to—and analysis of—historical performance data.

### **High-performance SSD support**

For applications that demand high disk speed and quick access to data, IBM provides support for SSDs in 200, 300 or 400 GB 2.5-inch E-MLC (enterprise-grade multilevel cell) SSDs, or up to 96 TB of physical capacity in a single system enabling scale-out high performance SSD support.

### External storage virtualization

External storage virtualization is the ability of the Storwize V7000 Unified system to manage capacity in other disk systems. When Storwize V7000 Unified virtualizes a disk system, its capacity becomes part of the Storwize V7000 Unified system and is managed in the same way as capacity on internal drives within Storwize V7000 Unified. Capacity in external disk systems inherits all the functional richness and ease-of-use of the Storwize V7000 Unified system including advanced replication, thin provisioning and Easy Tier. When virtualizing external storage, virtualizing external storage helps improve administrator productivity and boost storage utilization while also enhancing and extending the value of an existing storage asset.

### Storwize V7000 Unified system description

The Storwize V7000 Unified storage system is packaged in 2U rack-mountable enclosures that house up to twenty-four 2.5-inch drives or up to twelve 3.5-inch drives. Control enclosures contain drives, redundant dual-active intelligent RAID controllers and dual power supplies, batteries and cooling components. Expansion enclosures contain drives, switches, power supplies and cooling components. You can attach up to nine expansion enclosures to a control enclosure supporting up to 240 drives. Two control enclosures (each with up to nine

expansion enclosures) may be clustered together in a single system for even greater capacity and performance growth potential. Other components and characteristics of the system include:

- Internal storage capacity: Up to 36 TB of physical storage per enclosure using twelve 3 TB near-line SAS disk drive modules or up to 14.4 TB of physical storage per enclosure using twenty-four 2.5-inch 600 GB SAS disk drive modules
- Disk drives: SAS disk drives, near-line SAS disk drives and SSDs. Intermix of these drive types in the Storwize V7000 Unified controller and expansion enclosures add flexibility
- Cache memory: Sixteen GB cache memory (8 GB per internal RAID controller) as a base feature—designed to improve performance and availability
- Ports per control enclosure: Eight 8 Gbps Fibre Channel host ports (four 8 Gbps FC ports per RAID controller), four 1 Gbps and optionally four 10 Gbps iSCSI host ports (two 1 Gbps and optionally two 10 Gbps iSCSI host ports per RAID controller)
- Ports per File Module: Two 10Gbps Ethernet ports for server attachment, two 8 Gbps FC ports for attachment to Storwize V7000 control enclosures

### Power and cooling (typical environments)

	Power consumption	Cooling
12-bay control enclosure	380 W	1300 BTU/hr
24-bay control enclosure	410 W	1400 BTU/hr
12-bay expansion enclosure	175 W	600 BTU/hr
24-bay expansion enclosure	205 W	700 BTU/hr
File Module	150 W	520 BTU/hr

Storwize V7000 Unified control and expansion enclosures are each available in models that support twelve 3.5-inch disk drive bays or twenty-four 2.5-inch disk drive bays. The system supports intermixing 12-bay or 24-bay enclosures in a single system. The expansion enclosures connect to the control enclosure using four SAS 6 Gbps disk expansion ports.

- Control enclosure: Supporting attachment of up to nine expansion enclosures with configurations up to 360 TB physical storage capacities.
- Expansion enclosure: Packaged in a 2U rack-mountable enclosure that houses twenty-four 2.5-inch drive bays or twelve 3.5-inch drive bays and dual power supplies with cooling components. Physical storage capacity of up to 36 TB per storage expansion enclosure using twelve 3.5-inch 3 TB near-line serial attached SCSI (SAS) disk drive modules and up to 14.4 TB per storage expansion enclosure using twenty-four 2.5-inch 600 GB SAS disk drive modules.
- File module: Packaged in a 2U rack-mountable enclosure, a Storwize V7000 file module provides attachment to 10 Gbps NAS environments. File modules are always deployed in pairs for redundancy.
- Clustered systems: Two control enclosures (each with up to nine expansion enclosures) may be clustered together in a single system for even greater capacity and performance growth potential. Clustered systems support up to 480 disk drives and up to 720 TB capacity.

### **Electrical power**

- 12-bay and 24-bay control enclosures: 120 - 240 V ac, 3.8 - 9.0 A, 50/60 Hz
- 12-bay and 24-bay expansion enclosures: 100 - 240 V ac, 3.2 - 8.0 A, 50/60 Hz
- File modules: 100 - 240 V ac, 3.8 - 7.8 A, 50/60 Hz

### **Environment: all systems**

- Temperature (operating)
  - 10° to 35°C (50° to 95°F) at 0 to 914 m (0 to 3,000 ft)
  - 10° to 32°C (50° to 90°F) at 914 to 2,133 m (3,000 to 7,000 ft)
- Temperature (powered off):
  - 10° to 43°C (50° to 109°F)
- Temperature (storage):
  - 1° to 60°C (34° to 140°F) at 0 to 2,133 m (0 to 7,000 ft)
- Temperature (shipping):
  - 20° to 60°C (-4° to 140°F) at 0 to 10,668 m (0 to 35,000 ft)
- Relative humidity (operating and powered off): 8 percent to 80 percent
- Relative humidity (storage): 5 percent to 80 percent
- Relative humidity (shipping): 5 percent to 100 percent (including condensation but excluding rain)
- Wet bulb
  - Wet bulb (operating temp): 23°C
  - Wet bulb (powered off temp): 27°C
  - Wet bulb (storage and shipping temp): 29°C
- Noise level: 6.5 decibels LwAd—when operating in a 2146 system rack

Note: The noise emission level stated is the declared (upper limit) sound power level, in decibels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

**IBM Systems and Technology**  
Data Sheet

<b>Host interface</b>	SAN-attached 8 Gbps Fiber Channel (FC), 1 Gbps iSCSI and optional 10 Gbps iSCSI NAS-attached 10 Gbps Ethernet
<b>User interface</b>	Graphical user interface (GUI)
<b>Supported drives</b>	3.5-inch disk drives: <ul style="list-style-type: none"> <li>• 2 TB, 3 TB 3.5 in. 7.2k Near-Line SAS disk</li> </ul> 2.5-inch disk drives: <ul style="list-style-type: none"> <li>• 146 GB, 300 GB 2.5 in. 15k SAS disk</li> <li>• 300 GB, 450 GB, 600 GB 2.5 in.10k SAS disk</li> <li>• 200 GB, 300 GB, 400 GB 2.5 in. E-MLC (enterprise-grade multilevel cell) solid state drive (SSD)</li> <li>• 1 TB 2.5 in. 7.2k Near-Line SAS disk</li> </ul>
<b>RAID levels</b>	RAID 0, 1, 5, 6 and 10
<b>Maximum drives supported</b>	240 per control enclosure; 480 per clustered system
<b>Fans and power supplies</b>	Fully redundant, hot swappable
<b>Rack support</b>	Standard 19 inch
<b>Management software</b>	Storwize V7000 Unified software
<b>Cache per controller/control enclosure/clustered system</b>	8 GB/16 GB/32 GB
<b>Advanced features included with each system</b>	System Storage Easy Tier, FlashCopy, thin provisioning
<b>Additional available advanced features</b>	Remote mirroring, external virtualization unified storage, IBM® FlashCopy Manager, IBM Tivoli® Storage Productivity Center Midrange Edition, IBM Tivoli Storage Manager, IBM Tivoli Storage Manager FastBack®, IBM Systems Director, IBM Active Cloud Engine™
<b>Warranty</b>	Hardware: <ul style="list-style-type: none"> <li>• 3 year limited warranty</li> <li>• Customer replaceable units</li> <li>• On-site service</li> <li>• Next Business Day 9x5</li> <li>• Service upgrades available</li> </ul> Software: <ul style="list-style-type: none"> <li>• Software Maintenance Agreement available</li> </ul>

**IBM Systems and Technology**  
Data Sheet

<b>Replication services</b>	FlashCopy, FlashCopy Manager, Metro Mirror (Synchronous), Global Mirror (Asynchronous), local and asynchronous remote file-based replication
<b>Dimensions</b>	Control and expansion enclosures <ul style="list-style-type: none"> <li>• Width: 483 mm (19.0 in.)</li> <li>• Depth: 630 mm (24.8 in.)</li> <li>• Height: 87.9 mm (3.46 in.)</li> </ul> File Modules <ul style="list-style-type: none"> <li>• Width: 482 mm (19.0 in.)</li> <li>• Depth: 729 mm (28.7 in.)</li> <li>• Height: 85.2 mm (3.45 in.)</li> </ul>
<b>Weight</b>	12-bay enclosures: <ul style="list-style-type: none"> <li>• Drive-ready (without drive modules installed): 17.7 kg (37.6 lb)</li> <li>• Fully configured (12 drive modules installed): 27.2 kg (59.8 lb)</li> </ul> 24-bay enclosures: <ul style="list-style-type: none"> <li>• Drive-ready (without drive modules installed): 17.7 kg (37.6 lb)</li> <li>• Fully configured (24 drive modules installed): 25.2 kg (55.4 lb)</li> </ul>
<b>Supported systems</b>	For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the System Storage Interoperation Centre.
<b>ISV solutions</b>	For a list of high quality solutions with our partner <b>Independent Software Vendors (ISVs), including access to solution briefs and white papers, refer to the ISV Solutions Resource Library.</b>

**Why IBM?**

The performance and availability of your storage environment can either enhance or hamper your business processes. That's where IBM comes in. As a market leader in the storage industry, we can help you handle the challenges, whether you are a small to midsize company or a large enterprise.

Innovative technology, open standards, excellent performance, 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 you should consider storage solutions from IBM, including Storwize V7000 Unified.

With IBM, you get some of the best storage products, technologies, services and solutions in the industry without the complexity of dealing with different hardware and software vendors and system integrators.

### For more information

To learn more about IBM Storwize V7000 Unified, please contact your IBM sales representative or IBM Business Partner, or visit the following website: [ibm.com/storage/storwizev7000](http://ibm.com/storage/storwizev7000)

For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the System Storage Interoperation Center at: [ibm.com/systems/support/storage/config/ssic](http://ibm.com/systems/support/storage/config/ssic)

For a list of high quality solutions with our partner Independent Software Vendors (ISVs), including access to solution briefs and white papers, refer to: [ibm.com/systems/storage/solutions/isv](http://ibm.com/systems/storage/solutions/isv)

Additionally, financing solutions from IBM Global Financing can enable effective cash management, protection from technology obsolescence, improved total cost of ownership and return on investment. Also, our Global Asset Recovery Services help address environmental concerns with new, more energy-efficient solutions. For more information on IBM Global Financing, visit: [ibm.com/financing](http://ibm.com/financing)



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<sup>1</sup> IBM lab measurements - August 2010



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