



Highlights

- Deliver sophisticated enterprise-class storage functionality for businesses
 - Support your growing business requirements while controlling costs
 - Provide up to 200 percent performance improvement with automatic migration to high-performing SSDs¹
 - Enable storing up to five times more active data in the same physical disk space using IBM Real-time Compression²
 - Consolidate block and file storage for simplicity and greater efficiency
 - Enable near-continuous availability of applications through dynamic migration
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IBM Storwize V7000 and Storwize V7000 Unified Disk Systems

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

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.

IT organizations may also suffer from a range of challenges:

- Disruptive migrations
- Difficulty deploying tiered storage
- Concern about growth in storage and storage management costs
- Inability to share storage among servers
- Reduced productivity and increased cost caused by isolated server and storage management tools
- Inability to use virtualized storage in the way they use 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 and Storwize V7000 Unified are virtualized storage systems to complement virtualized server environments that provide unmatched performance, availability, advanced functions and highly-scalable capacity never seen before in midrange disk systems. Storwize V7000 and Storwize V7000 Unified are powerful midrange disk systems that have been designed to be easy-to-use and enable rapid deployment without additional resources. Storwize V7000 supports block workloads whereas Storwize V7000 Unified





consolidates block and file workloads into a single storage system for simplicity of management and reduced cost. Storwize V7000 and Storwize V7000 Unified are virtual storage systems that offer greater efficiency and flexibility through built-in solid state drive (SSD) optimization and thin-provisioning technologies. For Storwize V7000, integrated IBM Real-time Compression enhances efficiency even further by enabling storing up to five times as much active primary data in the same physical disk space. Storwize V7000 and Storwize V7000 Unified advanced functions also enable non-disruptive migration of data from existing storage, simplifying implementation and minimizing disruption to users. Finally, these systems also enable 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 application programming interfaces enables Storwize V7000 and 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.

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 and Storwize V7000 Unified provide the ability to optimize a tiered storage configuration to meet diverse application requirements.

Introducing Storwize V7000

Storwize V7000 is a powerful block 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.

Extraordinary Efficiency

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

Newest of these technologies is IBM Real-time Compression, which is designed to improve efficiency by compressing data as much as 80 percent, enabling you to store up to five times as much data in the same physical disk space. Unlike other approaches to compression, IBM Real-time Compression is designed to be used with active primary data such as production databases and e-mail applications, which dramatically expands the range of candidate data that can benefit from compression. As its name implies, IBM Real-time Compression operates immediately as data is written to disk so no space is wasted storing uncompressed data awaiting post-processing.

The benefits of using IBM Real-time Compression together with other efficiency technologies are very significant and include reduced acquisition cost (because less hardware is

required), reduced rack space, and lower power and cooling costs throughout the lifetime of the system. When combined with external storage virtualization, Real-time Compression can significantly enhance the usable capacity of your existing storage systems, extending their useful life even further.

IBM Real-time Compression is available for Storwize V7000 systems and is a planned enhancement for Storwize V7000 Unified systems.

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 expected 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 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 and Storwize V7000 Unified use 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 and Storwize V7000 Unified include a dynamic data migration function that is designed to move data from existing block storage into the new system or

between arrays in a Storwize V7000 or 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 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.

Next-generation networking

As organizations evolve towards a dynamic infrastructure, they need new ways to reduce the complexity of their environments. To address this challenge, clients are turning to Converged Enhanced Ethernet (CEE) networks, which help enable them to combine storage, messaging traffic, VoIP, video, and other data on a common data center Ethernet infrastructure.

In this environment, Fibre Channel over Ethernet (FCoE) helps enable highly efficient block storage over Ethernet for consolidating server network connectivity. As a result, you can deploy a single server interface for multiple data types, which can simplify both deployment and management of server network connectivity, while maintaining the high availability and robustness required for storage transactions.

Storwize V7000 systems with 10Gbps Ethernet ports now support attachment to next-generation Converged Enhanced Ethernet networks using Fibre Channel over Ethernet. This support enables you to connect Storwize V7000 to servers and to other Storwize V7000 systems for clustering or mirroring using Fibre Channel or FCoE interfaces using these networks. The same ports may also be used for iSCSI server connections.

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 storage, helping to simplify administration further.

Storwize V7000 Unified builds on the functions and 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 antivirus tools is designed to provide the ability to isolate or delete compromised files, and leverage the most commonly deployed independent software vendor (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 their virtualized storage design and tight affinity with technologies such as IBM PowerVM™ and VMware, Storwize V7000 and Storwize V7000 Unified are the ideal complement for virtualized servers that are at the heart of cloud deployments. Storwize V7000 and Storwize V7000 Unified help enable consolidation of multiple storage systems for greater efficiency. With Storwize V7000, clustered systems drive the value of consolidation even further, and IBM Real-time Compression helps improve cost effectiveness 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 supports block data while Storwize V7000 Unified supports both file and block data in the same system with replication functions optimized for the specific needs of each type of data.

For block data

Storwize V7000 and Storwize V7000 Unified include 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 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 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, Storwize V7000 Unified or IBM System Storage SAN Volume Controller systems at different locations to help create copies of data for use in the event of a catastrophic event at a data center. 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 system. This option helps provide a lower cost approach to delivering effective disaster recovery capability.

For file data

Storwize V7000 Unified offers data protection through a space-efficient file system and file set-level snapshots (up to 256 per file system). Snapshots of a file set 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 and 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 and 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

Storwize V7000 and Storwize V7000 Unified provide a tiered approach to management designed to meet the diverse needs of different organizations. The system’s 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. A recent study proved the effectiveness of the user interface, finding that tasks are 47 percent less time-consuming and 31 percent less complex than managing a competitor’s system³.

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 and Storwize V7000 Unified are integrated with IBM Systems Director Storage Control and IBM Flex System Manager. A single administrator can manage and operate IBM servers

(IBM System x®, IBM Power Systems™, IBM BladeCenter® and IBM PureFlex™ System) along with networking infrastructure and IBM storage from a single management screen.

For organizations looking to improve the operational efficiency of storage specialists, IBM 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, Storwize V7000 Unified and the surrounding storage infrastructure. Plug-ins to support Storwize V7000 and 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. For ultra-high-performance requirements, Storwize V7000 may be configured with only SSDs for up to 96 TB of physical capacity in a single system (384 TB in a clustered system), enabling scale-out high performance SSD support.

External storage virtualization

External storage virtualization is the ability of Storwize V7000 and Storwize V7000 Unified to manage capacity in other disk systems. When Storwize V7000 or Storwize V7000 Unified virtualizes a disk system, its capacity becomes part of the Storwize V7000 or Storwize V7000 Unified system and is

managed in the same way as capacity on internal drives. Capacity in external disk systems inherits all the functional richness and ease-of-use of Storwize V7000 or Storwize V7000 Unified including advanced replication, thin provisioning, Real-time Compression and Easy Tier. 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 and Storwize V7000 Unified system description

The Storwize V7000 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 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. Four 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 drives or up to 24 TB of physical storage per enclosure using twenty-four 2.5-inch 1 TB near-line SAS disk drives
- Disk drives: SAS disk drives, near-line SAS disk drives and SSDs. Intermix of these drive types within the IBM Storwize V7000 control and expansion enclosures add flexibility
- Cache memory: Sixteen GB cache memory (8 GB per internal 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 controller), four 1 Gbps and optionally four 10 Gbps iSCSI/FCoE host ports (two 1 Gbps and optionally two 10 Gbps iSCSI/FCoE host ports per controller)

Storwize V7000 control and expansion enclosures are each available in models that support twelve 3.5” disk drive bays or twenty-four 2.5” 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.
- 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 drives and up to 24 TB per storage expansion enclosure using twenty-four 2.5-inch 1 TB near-line SAS disk drives.

- File module: In a Storwize V7000 Unified system, File Modules are packaged in a 2U rack-mountable enclosure and provide attachment to 1Gbps and 10Gbps NAS environments. File Modules are always deployed in pairs for redundancy and connect to Storwize V7000 control enclosures.
- Clustered systems: For Storwize V7000 only, four 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 960 disk drives and up to 1.44 PB 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

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

IBM Storwize V7000 and Storwize V7000 Unified Disk Systems at a glance	
Host interface	SAN-attached 8 Gbps Fiber Channel (FC), 1 Gbps iSCSI and optional 10 Gbps iSCSI/FCoE NAS-attached 1 Gbps and 10 Gbps Ethernet
User interface	Graphical user interface (GUI)
Supported drives	3.5-inch disk drives: <ul style="list-style-type: none"> • 2 TB, 3 TB 3.5 in. 7.2k near-line SAS disk 2.5-inch disk drives: <ul style="list-style-type: none"> • 146 GB, 300 GB 2.5 in. 15k SAS disk • 300 GB, 450 GB, 600 GB, 900 GB 2.5 in.10k SAS disk • 200 GB, 300 GB, 400 GB 2.5 in. enterprise-grade multilevel cell (E-MLC)SSD • 1 TB 2.5 in. 7.2k near-line SAS disk
RAID levels	RAID 0, 1, 5, 6 and 10
Maximum drives supported	240 per control enclosure; 960 per clustered system
Fans and power supplies	Fully redundant, hot swappable
Rack support	Standard 19 inch
Management software	Storwize V7000 and Storwize V7000 Unified software
Cache per controller/control enclosure/clustered system	8 GB/16 GB/64 GB
Advanced features included with each system	System Storage Easy Tier, FlashCopy, thin provisioning, IBM Active Cloud Engine (Storwize V7000 Unified only)
Additional available advanced features	Remote mirroring, external virtualization unified storage, IBM FlashCopy Manager, IBM Tivoli Storage Productivity Center Select, IBM Tivoli Storage Manager, IBM Tivoli Storage Manager FastBack, IBM Systems Director, IBM Flex System Manager, IBM Real-time Compression
Warranty	Hardware: <ul style="list-style-type: none"> • 3-year limited warranty • Customer-replaceable units • On-site service • Next business day 9x5 • Service upgrades available Software: <ul style="list-style-type: none"> • Software maintenance agreement available
Replication services	FlashCopy, FlashCopy Manager, Metro Mirror (synchronous), Global Mirror (asynchronous), local and asynchronous remote file-based replication
Dimensions	Control and expansion enclosures <ul style="list-style-type: none"> • Width: 483 mm (19.0 in.) • Depth: 630 mm (24.8 in.) • Height: 87.9 mm (3.46 in.) File Modules <ul style="list-style-type: none"> • Width: 443 mm (17.5 in.) • Depth: 698 mm (27.5 in.) • Height: 85 mm (3.36 in.)

IBM Storwize V7000 and Storwize V7000 Unified Disk Systems at a glance

Weight	<p>12-bay enclosures:</p> <ul style="list-style-type: none"> • Drive-ready (without drive modules installed): 17.7 kg (37.6 lb) • Fully configured (12 drive modules installed): 27.2 kg (59.8 lb) <p>24-bay enclosures:</p> <ul style="list-style-type: none"> • Drive-ready (without drive modules installed): 17.7 kg (37.6 lb) • Fully configured (24 drive modules installed): 25.2 kg (55.4 lb) <p>File modules</p> <ul style="list-style-type: none"> • Maximum configuration: 29.6 kg (65 lb)
Supported systems	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.
ISV solutions	For a list of high quality solutions with our partner ISVs, including access to solution briefs and white papers, refer to the ISV Solutions Resource Library.

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.

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 and 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.

IBM Maintenance and Technical Support solutions can help you get the most out of your IT investment by reducing support costs, increasing availability and simplifying management with integrated support for your multiproduct, multivendor hardware and software environment.

IBM offers tailored financing solutions to credit-qualified clients that can be customized to address your specific IT needs from great rates to flexible payment plans and loans.

For more information

To learn more about IBM Storwize V7000 and Storwize V7000 Unified, please contact your IBM sales representative or IBM Business Partner, or visit the following website:

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

For a list of high quality solutions with our partner ISVs, including access to solution briefs and white papers, refer to: ibm.com/systems/storage/solutions/isv

Additionally, IBM Global Financing can help you acquire the IT solutions that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize an IT financing solution to suit your business goals, enable effective cash management, and improve your total cost of ownership. IBM Global Financing is your smartest choice to fund critical IT investments and propel your business forward. For more information, visit: 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.

¹ IBM lab measurements - August 2010

² IBM lab measurements - April 2012

³ Edison Group, Competitive Management Cost Study: IBM Storwize V7000 vs. EMC VNX5500 Storage Systems



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