

# IBM® STORWIZE® V5000

Greater Flexibility for Mid-sized Business



## ADVANCED FEATURES AND FLEXIBILITY

Organizations of all sizes are faced with a tidal wave of data coming from a myriad new sources, including sensors, social media, mobile platforms and more. Data has become the new currency of business, their most critical asset. But organizations often spend too much money and time managing where their data is stored. The average firm purchases 24 percent more storage every year<sup>2</sup>, but uses less than half of the capacity it already has<sup>3</sup>. To help maximize the benefits of growing amounts of data, many organizations are turning to software-defined storage, which frees data from physical storage and provides better access to applications. There are many ways to benefit from software-defined storage. One approach starts with data virtualization, which provides a software layer that helps simplify management. Data virtualization simplifies deployment of new applications and new storage tiers, eases movement of data among tiers, and enables consistent easy-to-use optimization technologies across multiple storage tiers.

The IBM® Storwize® family is the primary IBM solution for supporting software-defined storage and virtual infrastructures. IBM® Storwize® V5000, the latest addition to the family, is a virtualized, enterprise-class modular storage system that complements virtual server environments and delivers the flexibility and responsiveness required for changing business needs<sup>2</sup>.

As an intermediate offering, Storwize V5000 is designed to help consolidate and provide new capabilities to existing storage infrastructures. And because of its flexible licensing options, Storwize V5000 is simple to deploy with complementary storage solutions, such as IBM ProtecTIER®. To help address the block

storage requirements of midsized organizations, Storwize V5000 is intended to deliver more of what you need from storage with greater flexibility—while using fewer resources. Using innovative IBM technology, a single Storwize V5000 system can scale up to 240 drives, and up to 480 drives with two-way clustered systems.

## IBM® EasyTier®

IBM® EasyTier® provides automatic migration of frequently accessed data to high-performing flash storage, enhancing usage efficiencies. Operating at a fine-grained granularity, the optional Easy Tier function automatically repositions different data types to the appropriate class of drives based on input/output (I/O) patterns and drive characteristics, requiring no administrative interaction. Using Easy Tier, you can increase performance up to three times using only five percent flash storage<sup>1</sup>.

## VIRTUALIZE EXTERNAL STORAGE

External virtualization enables organizations to bring external Fibre Channel controller disk capacity into a pool of Storwize V5000 storage with software value and performance capabilities. This capability helps you to consolidate your existing storage systems, expanding the software benefits of Storwize V5000.

## REPLICATION SERVICES

IBM® Storwize® V5000 offers an optional IBM® FlashCopy® function designed to create an almost-instant copy of active data, which can be used for backup purposes or for parallel-processing activities.

Should a catastrophic event occur at a data center, Storwize V5000 supports remote mirroring to create copies of data for use at a second location. Metro Mirror supports synchronous replication at distances up to 300 km (186 mi), whereas Global Mirror supports asynchronous replication at distances up to 8,000 km (4,970 mi). Replication can occur between any Storwize family offerings, and can include any supported virtualized storage. With IP networking, Storwize V5000 supports 1 GbE and 10 GbE connections, and uses innovative Bridgeworks SANSlide technology to optimize the use of network bandwidth. As a result, the networking infrastructure may require lower speeds (and thus, lower costs), or users may be able to improve the accuracy of remote data through shorter replication cycles.

## AVOID DISRUPTIONS

Moving data is one of the most common causes of planned downtime. Storwize V5000 includes a dynamic data migration function that is designed to move data from existing storage into a new system or between arrays in a Storwize V5000 system, while maintaining user access to 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.

## ADDITIONAL FEATURES

In addition, Storwize V5000 includes:

- Innovative management capabilities, to ease storage management
- Dual clustering, to enable growth from smaller configurations
- Support for OpenStack Cinder driver, which helps automate storage provisioning and volume management for organizations by combining the efficiency of Storwize V5000 with the OpenStack compute cloud platform

## LEVERAGE PROVEN ISV SOLUTIONS

Lenovo is committed to the continuous improvement and seamless application integration of disk systems to optimize your business results and time to value. Our commitment is evident through our ongoing work and enduring partnerships with independent software vendors (ISVs) such as Microsoft, Oracle, SAP, Symantec and VMware.

## FEATURE

Graphical user interface (GUI)

IBM Easy Tier

External virtualization

Thin provisioning

Metro Mirror and Global Mirror

IBM FlashCopy

Dynamic migration

Distributed RAID

HyperSwap®

Spectrum Virtualize Software V7.6

## BENEFITS

Enhance IT productivity with an easy-to-use GUI and point-and-click system management capabilities

Provide automatic migration of frequently accessed data elements to high-performing flash storage

Virtualize your existing storage (IBM and non-IBM) to make it part of a Storwize V5000 system, where it inherits the advantages of Storwize capabilities

Support business applications that need to grow dynamically, while consuming only the space actually used

Allow synchronous or asynchronous data replication between Storwize family offerings for maximum flexibility and backup efficiency; support Fibre Channel, Fibre Channel over Ethernet (FCoE), and IP (Ethernet) networking

Create a near-instant copy of active data that can be used for backup or for parallel processing activities; support recovery of corrupted data

Provide non-disruptive migration to speed implementation

Improves data protection and availability with significantly smaller rebuild time

HyperSwap capability in IBM Spectrum Virtualize Software V7.6 delivers high availability and disaster recovery in one solution. HyperSwap reuses capital investments in order to achieve a range of recovery and management options which are transparent to host operations.

Supports Microsoft™ Offloaded Data Transfer (ODX), VMware vSphere 6, and the underlying infrastructure for VMware Virtual Volumes (VVols).

## WHY LENOVO ENTERPRISE STORAGE

Lenovo is the leading provider of x86 systems for the data center. The portfolio includes rack, tower, blade, dense and converged systems, and supports enterprise class performance, reliability and security. Lenovo also offers a full range of networking, storage, software and solutions, and comprehensive services supporting business needs throughout the IT lifecycle.

PRODUCT SPECIFICATIONS	
Part number	619412C - Storwize V5000 3.5" Storage Controller Unit 619412E - Storwize V5000 3.5" Storage Expansion Unit 619424C - Storwize V5000 2.5" Storage Controller Unit 619424E - Storwize V5000 2.5" Storage Expansion Unit
Host interface	1 Gb iSCSI, 12 Gb SAS and 8 or 16 Gb Fibre Channel, or 10 Gb iSCSI/Fibre Channel over Ethernet (FCoE)
User interface	Web-based graphical user interface (GUI)
Single/dual controller	Dual controller
Maximum cache	32 GB (with two-way clustered systems)
Drive type	Dual-port, hot-swappable, 6 Gb SAS disk drives
Supported drives	Small form-factor 2.5-inch SAS disk drives: <ul style="list-style-type: none"> <li>• 300 GB, 600 GB at 15k rpm</li> <li>• 600 GB, 900 GB, 1.2 TB, and 2 TB at 10k rpm</li> <li>• 1 TB and 2 TB at 7.2k rpm Nearline SAS</li> </ul> Large form-factor 3.5-inch SAS disk drives: <ul style="list-style-type: none"> <li>• 2 TB, 3 TB, 4 TB, 6 TB, 8 TB at 7.2k rpm</li> <li>• 900 GB, 1.2 TB, 1.8 TB at 10k rpm</li> <li>• 300 GB, 600GB at 15k rpm</li> </ul> Solid-state drives (SSD) drives: <ul style="list-style-type: none"> <li>• 200 GB, 400 GB, 800 GB, and 1.6 TB</li> </ul>
Maximum drives supported	Up to 19 Storwize V5000 expansion enclosures (maximum of 480 drives per system and 960 drives in two-way clustered systems): <ul style="list-style-type: none"> <li>• Small form-factor enclosure: 24 x 2.5-inch drives</li> <li>• Large form-factor enclosure: 12 x 3.5-inch drives</li> </ul>
Warranty	<ul style="list-style-type: none"> <li>• 1 -3 year warranty with optional additional services</li> </ul>

RAID levels	RAID 0, 1, 5, 6 and 10; Supports Distributed RAID 5 and 6
Fans and power supplies	Fully redundant, hot-swappable
Rack support	Standard 19-inch rack-mount* enclosure with AC power
Management software	Storwize family software for Storwize V5000
Dimensions	8.7 cm (3.4 in.) H x 48.3 cm (19.0 in.) W x 55.6 cm (21.9 in.) D Approximate weight: <ul style="list-style-type: none"> <li>• Large form-factor control enclosure:                             <ul style="list-style-type: none"> <li>- Empty: 18.0 kg (39.6 lb)</li> <li>- Fully configured: 28.3 kg (62.2 lb)</li> </ul> </li> <li>• Large form-factor expansion enclosure:                             <ul style="list-style-type: none"> <li>- Empty: 16.4 kg (36.1 lb)</li> <li>- Fully configured: 26.7 kg (58.8 lb)</li> </ul> </li> <li>• Small form-factor control enclosure:                             <ul style="list-style-type: none"> <li>- Empty: 19.0 kg (41.8 lb)</li> <li>- Fully configured: 27.3 kg (60.0 lb)</li> </ul> </li> <li>• Small form-factor expansion enclosure:                             <ul style="list-style-type: none"> <li>- Empty: 16.7 kg (36.7 lb)</li> <li>- Fully configured: 25.0 kg (55.2 lb)</li> </ul> </li> </ul>
Operating environment	<ul style="list-style-type: none"> <li>• Air temperature:                             <ul style="list-style-type: none"> <li>- Operating: 10°C – 35°C (50°F – 95°F) at 30.5 m below to 3,000 m above sea level (100 ft below to 9,840 ft above)</li> <li>- Non-operating: -10°C – 50°C (14°F – 125°F)</li> </ul> </li> <li>• Relative humidity:                             <ul style="list-style-type: none"> <li>- Operating: 20% – 80%</li> <li>- Non-operating: 10% – 90%</li> </ul> </li> <li>• Electrical power:                             <ul style="list-style-type: none"> <li>- Voltage range: 100 – 240 V ac</li> <li>- Frequency: 50 – 60 Hz</li> <li>- Large form-factor control enclosure: 378 watts</li> <li>- Large form-factor expansion enclosure: 300 watts</li> <li>- Small form-factor control enclosure: 425 watts</li> <li>- Small form-factor expansion enclosure: 338 watts</li> </ul> </li> </ul>

## FOR MORE INFORMATION

To learn more about the IBM® Storwize® V5000, contact your Lenovo representative Business Partner or visit [lenovo.com/systems/storage](http://lenovo.com/systems/storage)

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1- IBM lab measurements – August 2010.; 2- TheInfoPro "Wave 17 Storage Study," 451 Research, October 2013. <https://451research.com/component/content/article/15/254-theinfo-pro-wave-17-storage-study>; 3- IBM storage infrastructure optimization studies – April 2014. IBM, the IBM logo, ibm.com, Storwize, Easy Tier, Real-time Compression, and Tivoli are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at <http://www.ibm.com/legal/copytrade.shtml>