Scalable near-line storage for small to midrange computing environments

IBM TotalStorage DS4100
(formerly IBM TotalStorage FAStT100)

Highlights

- ***Well-suited for small to medium-sized enterprises that need affordable, entry-level near-line storage for seldom accessed data***
- ***Supports storage expansion of up to 112 SATA disk drives with IBM® TotalStorage® DS4000 EXP100 enclosures, and up to 14 disk drives with single controller***
- ***Designed to allow upgrade to a higher capacity IBM TotalStorage DS4000 (formerly FAStT storage servers) while avoiding data loss or interruption***
- ***Offers high-availability features that are designed to avoid single points of failure***
- ***Provides four 2Gb Fibre Channel host ports designed to economically support multipath failover for direct-attach clustered servers***
- ***Includes powerful, intuitive management tools, such as the IBM TotalStorage DS4000 Storage Manager, that help centrally manage the DS4000 series***

Most businesses today must retain a growing volume of valuable data that is rarely accessed—if at all—but needs to be online and stored for long periods of time. This near-line application storage must keep up with demand; however, for small and medium-sized enterprises, predicting storage needs and controlling costs can be especially challenging as business grows.

The IBM TotalStorage DS4100 (formerly the FAStT100 Storage Server) is designed to give cost-conscious enterprises an entry-level server that can help meet storage consolidation and near-line application storage needs without undo expense, while leaving them room to grow. With a dual controller, up to 28TB of Serial ATA (SATA) physical disk storage—and 14 internal 250GB disk drives inside the controller, and single controller supporting up to 3.5TB with 14 internal 250GB disk drives inside the controller—the DS4100 is designed to provide ample yet scalable storage without the cost of extra expansion units. This storage

server also is designed to help consolidate direct-attach storage into a centrally managed, shared or storage area network (SAN) environment. And with dual controller having four Fibre Channel ports to attach to servers, the need for additional switches can be reduced or eliminated to help provide additional cost savings.

The DS4100 is designed to interoperate with IBM @server® pSeries® and xSeries® servers as well as with other Intel® processor based and UNIX®-based servers. To help make integration easy, IBM tests the DS4100 for interoperability with IBM servers, as well as with many other brands of servers and switches.

The DS4100 also includes management tools and automation features designed to help lower administration costs. And the cost benefits that come with the DS4100 are not at the expense of reliability—the SATA-based DS4100 helps support increased reliability and performance compared to many older, nonredundant designed parallel ATA products.

Scalability and reliability as storage needs grow

With the dual controller, enterprises can expand DS4100 capacity—up to 112 SATA disk drives—with the DS4000 EXP100 SATA disk drive storage unit, which helps address the requirements of various fixed-content and retention-managed data applications that require large amounts of storage capacity.

Another scalability feature of the DS4100 is Dynamic Capacity Expansion, which also is designed to provide the ability to add DS4000 EXP100 enclosures to an existing DS4100 while avoiding interruption to operations. By adding these enclosures, the DS4100 is designed to help bring unused storage online for a new host group or an existing volume to provide additional capacity on demand. The DS4100 includes many of the same redundant hardware design features as other DS4000 series to help protect and keep data online as storage server arrays evolve.

As part of the DS4000 series, the DS4100 is designed to enable capacity and version upgrades to other DS4000 series and uses common storage management software and expansion enclosures. By using the DS4000 Storage Manager version 8.42, you can combine multiple DS4100s to help address additional capacity requirements—helping further enhance your ability to respond on demand. These capabilities are designed to enable small to medium-size enterprises to move up to higher capacity servers as their needs change while helping manage expenditures, keep valuable data intact and minimize downtime.

Centralized and low-cost administration

Along with providing affordable, scalable storage, the DS4100 is designed to help reduce system administration costs through server consolidation, direct-attach storage capabilities and management tools such as the IBM TotalStorage DS4000 Storage Manager.

The DS4000 Storage Manager is designed to support centralized management of all local and networked DS4000 series. For efficiency, it helps allow administrators to quickly configure and monitor storage from a Java™-based Web browser interface. The Storage Manager also is designed to help administrators customize and change settings as well as configure new volumes, define mappings, handle routine maintenance and dynamically add new enclosures and capacity to existing volumes—while avoiding interruption to user access to data.

Failover drivers, performance-tuning routines and cluster support are also standard features of the DS4000 Storage Manager designed to help improve availability. The DS4100 also supports many nondisruptive, automatic controller firmware upgrades to help make it easy to add functionality. By providing these features and an intuitive user interface, the DS4000 Storage Manager is designed to help reduce the complexity of storage management and the amount of time spent managing storage.

Improved data management and protection

The IBM TotalStorage DS4100 has several features designed to help improve data management. Using the DS4000 Storage Manager software, administrators can partition the DS4100 into as many as 16 virtual servers. This capability allows IT organizations to strategically allocate storage capacity, helping to optimize the utilization of storage space and reduce hardware and storage management costs.

Instead of purchasing multiple RAID controllers with their own dedicated disks and management, organizations can attach multiple servers to one central system—the DS4100 dual controller model—which is designed to help provide hardware failover with dual controllers and common management.

Other DS4100 features designed to help enhance data management and protection include IBM FlashCopy®, Dynamic Volume Expansion, Dynamic Capacity Expansion, Dynamic RAID Expansion and Dynamic Segment Size.

- *IBM FlashCopy is designed to create point-in-time copies of logical volumes, which may be used for file restoration, backups, application testing or data mining.*
- *Dynamic Volume Expansion is designed to allow administrators to resize logical volumes while avoiding disruption to users. This feature can work well for applications with rapidly growing data requirements, such as Lotus Notes® and Microsoft® Exchange applications.*
- *Dynamic Capacity Expansion is designed to allow administrators to add new disk drives to a RAID array to help increase array capacity, while the system remains operational. The need for storage space grows constantly in today's IT environment, so it is essential to have a capacity expansion process designed to be nondisruptive and avoid downtime.*

- *Dynamic RAID Expansion is designed to allow administrators to change the RAIDlevel of an array while avoiding disruption. IT administrators can use Dynamic RAID Expansion when storage requirements change over time, when existing RAID levels are no longer optimal for a particular environment or when the performance-tuning process has indicated that a different RAID level would be more appropriate than the existing one.*
- *Dynamic Segment Sizing is designed to allow the block size or data stripe to be changed while avoiding downtime. RAID controllers read and write data to and from the disk drives in fixed-sized segments or blocks of data. Choosing the right segment size is important for optimal performance.*

Intuitive tools that help manage storage

The DS4100 is supported by a variety of IBM Tivoli® software products, including Tivoli Storage Manager and Tivoli Storage Resource Manager, as well as many third-party hardware and software products. These applications can add to the capabilities of the DS4100 by enabling backup and storage reporting.

The IBM TotalStorage Proven™ program is designed to identify and test products for interoperability with the DS4100 and other IBM disk products. Products in this program have been tested to help reduce or eliminate time-consuming installation and support problems. For more information, please visit **ibm.com**/totalstorage/proven

Reliable service and support

The DS4000 series is backed by a hardware warranty. Additional services for hardware installation, DS4000 Storage Manager configuration and advanced storage management are also available from IBM Global Services (IGS). IBM SupportLine services can assist with using the DS4000 Storage Manager, helping customers to maintain their DS4000 series.

The optional DS4000 Service Alert feature is designed to enable the DS4100 to quickly notify the IBM Support Center of problems when they occur, helping to reduce or eliminate the need for customers to place service calls. This feature can forward error alert messages via email from DS4000 Storage Manger to IBM to help expedite diagnosis and repair of failed hardware and software problems.

Competitive financing options from IBM Global Financing

IBM Global Financing offers some of the industry's most competitive rates for a wide range of IBM products and services, including the DS4100, for the duration of the financing term.
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High-performance storage for the on demand world

The features of the DS4100 further enhance the functionality, flexibility and scalability of the DS4000 series. As a nearline, SATA storage server, the DS4100 is designed for applications that require faster access than offline storage offers but do not require the continuous, instantaneous access provided by online storage. DS4100 can also be used to cache online storage for quicker backup to tape.

The performance, capacity and data management and protection capabilities of the DS4100 not only can help address the storage needs of today, but also can provide a base for continued growth to help businesses meet future storage requirements. By combining

IBM TotalStorage DS4100 at a glance

Characteristics	
Model	1724-100
RAID controller	Single/Dual active 2GB RAID controllers
Cache memory	256MB/512MB total, battery-backed
Host interface	2/4 Fibre Channel (FC) Switched and FC Arbitrated Loop (FC-AL) standard
Drive interface	2 Gbps FC-AL
Supported drives	250GB 7,200 rpm
RAID levels	0, 1, 3, 5, 10
Storage partitioning	Standard Host Group, upgradeable to 4, 8 or 16 partitions
Maximum drives supported	112 Serial ATA drives (using seven DS4000 EXP100 Expansion Units)
Fans and power supplies	Redundant, hot-swappable
Rack support	19-inch, industry-standard rack
Management software	IBM TotalStorage DS4000 Storage Manager version 8.42
SAN support	Supported IBM FC switches and directors (product numbers 2109, 3534, 2031, 2032, 2042 and 2062)
Optional copy service	FlashCopy
Warranty	1-year parts and labor warranty with 24x7 support 4-hour response
Physical characteristics	
Dimensions	132.3 mm H x 482 mm W x 597 mm D (5.2 in x 19 in x 24 in)
Weight	30 kg (66 lbs)
Supported systems[1]	For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the DS4100 Interoperability Matrix available at **ibm.com**/storage/ds4100. For availability dates, configuration options and attachment capabilities, refer to **ibm.com**/storage/ds4100. The DS4100 is supported only in rack installations. With optional features, up to seven DS4000 EXP100 Expansion Units can be attached to the DS4100 dual controller model for a maximum of 112 drives. The DS4100 single controller supports up to 14 internal disk drives.

these capabilities with a design focused on SATA solutions, manageability and affordability, the DS4100 can offer a cost-effective storage system for small to medium-size enterprises.

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Contact your IBM representative or IBM Business Partner, or visit:

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MB, GB and TB equal 1,000,000; 1,000,000,000; and 1,000,000,000,000 bytes, respectively, where referring to storage capacity. Actual storage capacity will vary based upon many factors and may be less than stated. Some numbers given for storage capacities give capacity in native mode, followed by capacity using data compression technology.

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[1] For specific details and configuration availability, please visit **ibm.com**/storage/ds4100.

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