

Manage growth, complexity and risk with scalable, high-performance storage



IBM System Storage DS4800



Highlights

- **4 Gbps Fibre Channel interface technology**
- **Up to 1724 MBps bandwidth for high-throughput applications**
- **Intermix of Fibre Channel and SATA hard disk drives supported in the EXP810 storage expansion unit**
- **Includes IBM System Storage™ DS4000™ Storage Manager to help centrally manage the DS4000 series**
- **Eight host channels for increased connectivity**
- **Supports intermix of EXP810, EXP710 and EXP100**

4 Gbps Fibre Channel interface technology

The IBM System Storage DS4800 disk storage system supports a high-performance 4 Gbps Fibre Channel interface. Increased host connectivity delivers the necessary bandwidth for high-throughput applications. Designed for data-intensive applications that demand increased connectivity, eight 4 Gbps host channels can help provide up to 1724 MBps of sustained bandwidth, allowing for high-throughput applications through eight channels directly attached to the host servers or connected to a Fibre Channel storage area network (SAN).

Designed to help lower your total cost of ownership (TCO)

Take advantage of the performance offered by 4 Gbps technology with IBM System Storage DS4800.

Two ways to measure performance of an SAN device are megabytes per second (MBps) and input/output per second (IOPS). The IBM DS4800 4 Gbps SAN can impressively offer up to 1724 MBps throughput with up to 575,000 IOPS from cache. A 2 Gbps storage array can require twice as many host ports as a 4 Gbps array to deliver the throughput of four 4 Gbps ports. This frees up ports in the SAN for each array.

On the host side, if a server requires more than the minimum of two 2 Gbps host bus adapters (HBAs) for availability to attain the required performance, that number can be halved with 4 Gbps. Fewer HBAs help lower the number of switch ports used and can help reduce overall cost.

Business continuity

Develop storage environments that can deliver unprecedented data availability with the help of IBM System Storage DS4800 disk storage system. Offering a choice of multiple redundant array of independent disks (RAID) levels and redundant, hot-swappable components, the DS4800 disk storage system can help you maintain data availability and security.

Enhance resiliency with IBM disk storage systems. Powerful dynamic capabilities help protect data and prevent failure, not just respond and recover. Recover quickly from disaster with point-in-time copying. Providing enterprise-class disaster recovery strategies, IBM FlashCopy® enables copy with VolumeCopy and remote mirroring with Enhanced Remote Mirroring.

IBM DS4800 4 Gbps technology is backward compatible with 2 Gbps and even 1 Gbps—you need not replace your entire SAN with 4 Gbps technology, but add the new technology incrementally. Of course, 4 Gbps products will slow down to 2 Gbps or 1 Gbps if they are connected, but zoning can allow a rolling upgrade strategy with minimal disruption.

Information lifecycle management (ILM)

Information insights help your business succeed in an ever-changing global marketplace. The IBM DS4000 series allows flexible access to information. The series also provides a broader range of scale and performance options to provide structure and context to information. As a result, you can build data management strategies that align with your information requirements.

Managing information can be a key process for an IT organization. IBM DS4800 can help accommodate the changing value of data over time while maintaining data availability.

IBM System Storage DS4000

The IBM System Storage DS4000—known for exceptional performance, robust functionality and unparalleled ease of use—offers a foundation for the new DS4800. IBM DS4800 introduces next-generation 4 Gbps Fibre Channel (FC) technology. Proven storage technology is the basis for a system designed to handle compute-intensive workloads and provide robust functionality while maintaining availability.

The DS4800 controller is designed to deliver up to three times the throughput performance of the DS4500. Excelling at IOPS and MBps, the DS4800 is a great fit for both transaction-oriented and bandwidth-intensive applications. It is designed to easily satisfy performance-hungry workloads. Additionally, the DS4800 is a great choice for environments with intense replication requirements, because it can efficiently handle the additional performance demands of FlashCopy, VolumeCopy and Enhanced Remote Mirroring.

The DS4800 has eight independent 4 Gbps FC host ports for direct-attachment to host (FC-AL) or fabric attachment to storage area networks (FC-SW). One of the first enterprise-class storage systems based on 4 Gbps FC technologies, the DS4800 can help customers prepare for the future while making the most of their current infrastructure. It provides auto-negotiate FC connection speeds, allowing integration into an existing 1 Gbps or 2 Gbps infrastructure. The storage system also helps enable environments to benefit from performance and connectivity improvements, while helping protect investment when the SAN inevitably becomes 4 Gbps.

Eight 4 Gbps drive connections support up to 224 disk drives with the attachment of 14 DS4000 EXP810, 16 DS4000 EXP710 or 16 DS4000 EXP100 disk enclosures, making it a great choice for performance-oriented or capacity-oriented storage requirements. Models 80, 82, 84, and 88 support more than 67.2 TB of Fibre Channel (FC) physical storage capacity

and 224 TB of Serial ATA (SATA) physical storage capacity with attachment of 14 EXP810 storage expansion units. Additionally, support for high-performance Fibre Channel and high-capacity serial ATA (SATA) disk drives enables a single DS4800 storage system to satisfy primary and secondary storage. Support for intermixing EXP810, EXP710 and EXP100 behind DS4800 expands your storage usage for greater flexibility.

The DS4800 expands its predecessor's history of flexibility with another configuration option—cache size. The DS4800 is available in four models:

- *Models 80 and 82 support 4 GB of physical cache memory (2 GB per controller)*
- *Model 84 supports 8 GB of physical cache memory (4 GB per controller)*
- *Model 88 supports 16 GB of physical cache memory (8 GB per controller)*

The DS4800 runs the same robust, yet intuitive, storage management software as previous storage systems in the series and is designed to allow maximum utilization of storage capacity and complete control over a rapidly growing storage environment.

With a history of flexibility to manage growth, the DS4800 builds on the series with drive options that help manage complexity. In addition, the increased data protection of the DS4800 helps manage risk.

Wide range of storage consolidation and clustering applications

IBM DS4800 is an affordable, scalable storage server for storage consolidation and clustering applications. Its modular architecture, which includes Dynamic Capacity Addition and Dynamic Volume Expansion, can support on-demand environments by enabling storage to grow as demands increase. Autonomic features such as online firmware upgrades and DS4000 Remote Support Manager also help enhance the system's usability.

The DS4800 can help consolidate direct-attached storage into a centrally managed, shared or storage area network (SAN) environment. With built-in support for eight Fibre Channel-attached servers, the need for additional switches is reduced or eliminated, helping to make server clustering more cost-effective.

4 Gbps expansion unit supported on DS4800

The DS4000 EXP810 is a 4 Gbps switched disk expansion unit supporting 16 Fibre Channel disk drives inside the enclosure and has an ESM-embedded Fibre Channel loop switch. The loop switch creates point-to-point Fibre Channel communication. This allows the ESMs and drives to operate as though they were on a private Fibre Channel arbitrated loop, but with the performance and diagnostic advantages of Fibre Channel fabric. A great advantage of the DS4000 EXP810 is a significant reduction in the number of Fibre Channel nodes on the drive loops.

Improved storage density with 16 disk drives supported inside the expansion unit provides more storage capacity than the 14 bay DS4000 EXP710. The DS4000 EXP810 supports 2 Gbps and 4 Gbps disk drive modules. Note: When configured with 2 Gbps drives, the 4 Gbps disk drive module will run at 2 Gbps speed.

Part of the DS4000 series

The DS4800 uses common storage management software and expansion enclosures to the DS4000 series. The DS4800 helps support intermix attachment with the DS4000 EXP810, EXP710 and EXP100 Expansion Units that utilize Fibre Channel technology. The DS4800 models can also be used with the DS4000 EXP100 Serial ATA disk drive storage unit to help address the requirements of various fixed content and data reference applications. These applications require large amounts of storage capacity but do not have the high utilization and access characteristics satisfied by DS4000 EXP710 and EXP810 Fibre Channel disk drive storage.

Scalability throughout the series

Because the DS4800 is scalable up to 224 Fibre Channel or 224 Serial ATA disk drives, it can be upgraded from a workgroup SAN to an enterprise network storage system. Upgrading can help provide flexibility to grow with your business. In addition, by using the IBM DS4000 Storage Manager software, multiple DS4800s can be combined to help address additional performance and capacity requirements, further enhancing your scalability options.

Another scalability feature of the DS4800 is Dynamic Capacity Expansion (DCE), which provides the ability to add DS4000 EXP810, DS4000 EXP710 or DS4000 EXP100 enclosures to an existing DS4800 without stopping operations. By adding these enclosures, the DS4800 can help bring unused storage online for a new host group or an existing volume to provide additional capacity on demand.

Dynamic Capacity Expansion allows upgrades to higher performing DS4000 series systems while keeping data intact, helping to minimize disruptions during upgrades. The DS4800 also supports online controller firmware upgrades to help provide better performance and functionality. Events such as upgrades to support the latest version of DS4000 Storage Manager, or to add services such as DS4000 Remote Support Manager for Storage, can often be executed without stopping operations.

DS4000 Intermix feature for attaching Fibre Channel and Serial ATA Disk Storage Expansion units

The IBM DS4800 midrange disk system has the capability to support intermix attachment of the DS4000 EXP810 Fibre Channel and Serial ATA Disk Expansion units, DS4000 EXP710 Fibre Channel Disk Expansion units, and DS4000 EXP100 Serial ATA Disk Expansion units concurrently. This feature allows you to create and manage distinct array groups that are built from either FC or SATA disks. It also allocates logical drives to the appropriate applications utilizing a single DS4000

system. Applications that demand high performance and have high I/O rates could use the FC-based drives, while near-line or applications that do not demand the higher performance can be maintained on the SATA based-drives.

Centralized administration through DS4000 Storage Manager

The IBM DS4000 Storage Manager software included with the DS4800 supports centralized management of local and networked DS4000 series systems. DS4000 Storage Manager allows administrators to quickly configure and monitor storage from a Java™ technology-based GUI. It also allows them to 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—all without interrupting user access to data. Failover drivers, performance-tuning routines and cluster support are also standard features of the DS4000 Storage Manager. By providing these features and an intuitive user interface, the DS4000 Storage Manager can help reduce the complexity of storage management and the amount of time spent managing storage.

Enhanced storage management capabilities

IBM DS4800 has several features designed to improve data management and storage system performance. Using the DS4000 Storage Manager software, administrators can partition the DS4800 into as many as 512 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 DS4800—which is designed to provide hardware failover with dual controllers and common management.

Other DS4800 features that can help enhance data management and protection include FlashCopy, Dynamic Volume Expansion, VolumeCopy and Enhanced Remote Mirroring.

The FlashCopy feature enables point-in-time copies of logical volumes, which may be used for file restoration, backups, application testing or data mining.

Dynamic Volume Expansion allows administrators to resize logical volumes without disrupting users. This feature can work well for applications with rapidly growing data requirements, such as IBM Lotus Notes® and Microsoft® Exchange.

VolumeCopy feature provides full replication of one logical volume (source) to another (target) within the DS4800. VolumeCopy is designed to allow read-only access to the source volume during the copy process and suspend writes to support point-in-time integrity.

Enhanced Remote Mirror consists of Global Mirror with Asynchronous Write-order Consistency, which is critical for mirroring multi-LUN applications, Global Copy with Asynchronous and Metro Mirror with Synchronous.

Additional tools to help manage storage

The DS4800 is supported by a variety of IBM Tivoli® software products. IBM Tivoli Storage Manager, IBM Tivoli Storage Resource Manager and many other third-party hardware and software products can add to the capabilities of the DS4800 by enabling backup and storage reporting.

The IBM System Storage Proven™ program identifies and tests many of these products for interoperability with the DS4800 and other IBM disk products. Products in this program have been tested to help reduce or eliminate time-consuming installation and support issues. For more information, please visit ibm.com/storage/proven.

Service and support

The DS4800 has a three year, 9x5, next-business-day hardware warranty. Additional services for hardware installation, DS4000 Storage Manager configuration and advanced storage management are also available from IBM Global Services (IGS). IBM Support Line services can assist with using DS4000 Storage Manager to help enable self-maintenance for the DS4000 system.

The optional DS4000 Remote Support Manager for Storage service enables the DS4800 to quickly notify the IBM Support Center when the system detects a problem. This notification can help reduce or eliminate the need for a service call. To help expedite diagnosis and repair of failed hardware and software, error alert messages from DS4000 Storage Manager can be forwarded through e-mail.

Competitive financing options from IBM Global Financing

IBM Global Financing offers competitive rates for a wide range of IBM products and services, including the DS4800, for the duration of the financing term. IBM provides faster, simpler and more responsive IT financing with highly competitive rates, flexible terms, predictable costs and fast approval process for DS4800 and associated software and services. For more information, please visit ibm.com/financing.

IBM System Storage DS4800 at a glance

Characteristics

Model	1815-80A, 1815-82A, 1815-84A, 1815-88A
RAID controller	Dual active
Cache	Model 80: 4 GB Model 82A: 4 GB Model 84A: 8 GB Model 88: 16 GB Battery-backed
Host interface	8 host ports—Fibre Channel (FC) Switched and FC Arbitrated Loop (FC-AL) standard, auto-sensing 1 Gbps/2 Gbps/4 Gbps
Drive interface	8 drive ports—Fibre Channel (FC) Switched and FC Arbitrated Loop (FC-AL) standard, auto-sensing 2 Gbps/4 Gbps
Supported drives with expansion units	4 Gbps SATA: 7.2K rpm, 1 TB, 750 GB and 500 GB 4 Gbps FC: 15K rpm, 300 GB/146 GB/73 GB (E-DDM)
RAID levels	0, 1, 3, 5, 10
Storage partitions	8, 16, 32, 128, 256 or 512 storage partitions
Maximum drives supported	Model 80A: 224 drives (using 14 DS4000 EXP810, 16 EXP710 or EXP100 Expansion Units)
Note: DS4800 supports intermixing EXP810, EXP710 and EXP100 Expansion Units	Model 82A: 224 drives (using 14 DS4000 EXP810, or 16 EXP710 or EXP100 Expansion Units) Model 84A: 224 drives (using 14 DS4000 EXP810, or 16 EXP710 or EXP100 Expansion Units) Model 88A: 224 drives (using 14 DS4000 EXP810, or 16 EXP710 or EXP100 Expansion Units)
Fans and power supplies	Dual redundant, hot-swappable
Rack support	19-inch, industry-standard rack
Management software	IBM System Storage DS4000 Storage Manager Version 10.10
SAN support	Supported IBM FC switches and directors (product numbers 2005, 2006, 2109, 2026, 2027, 2031, 2032, 2034, 2042, 2054, 2061 and 2062, and IBM BladeCenter®)
Warranty	Three year parts and labor warranty, 9x5 next business day, upgradeable to 24x7 with four-hour response

Physical characteristics

Dimensions	H 174.50 mm (6.87 in) W 481.75 mm (18.97 in) D 634.92 mm (25.0 in)
Weight	36.38 kg (80.2 lb)
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 DS4800 Interoperability Matrix available at ibm.com/storage/disk/ds4000/ds4800 . For availability dates, configuration options, and attachment capabilities, refer to: ibm.com/storage/disk/ds4000/ds4800 The DS4800 is supported only in rack installations. With optional features, up to 14 DS4000 EXP810, or 16 EXP710/EXP100 Expansion Units can be attached to the DS4800 a maximum of 224 drives.”

For more information

Contact your IBM representative,
IBM Business Partner or visit:

[ibm.com/storage/disk/ds4000/
ds4800](http://ibm.com/storage/disk/ds4000/ds4800)



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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/disk/ds4000/ds4800.