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

IBM System Storage DS4700 Express Model

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**Highlights**

- Optimize performance with end-to-end 4 Gbps capable Fibre Channel interface technology
- Achieve up to 1550 MBps bandwidth for high-throughput applications
- Gain support for Fibre Channel hard disk drives
- Centrally manage the DS4000® series with the IBM System Storage™ DS4000 Storage Manager
- Increase connectivity through eight host channels with dual controllers
- Support up to 112 disk drive modules with the attachment of six DS4000 EXP810 expansion units
- Benefit from NEBS-3 compliant systems, powered from a -48 V dc Telco industry-standard power source

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Manage data more effectively with IBM System Storage DS4700 Express

Optimized data management requires storage solutions with high data availability, strong storage management capabilities and powerful performance features. IBM offers the IBM System Storage™ DS4700 Express, designed to provide lower total cost of ownership, high performance, robust functionality, and unparalleled ease of use.

As part of the IBM DS4000® series, the DS4700 Express offers:

- High-performance 4 Gbps capable Fibre Channel connections.
- Up to 112 TB of physical storage capacity with 112 1 TB SATA disk drives.
- Powerful system management, data management, and data protection features.

**Achieve a lower total cost of ownership**

The DS47000 Express can help you lower the total cost of ownership while supporting data-intensive applications that demand increased connectivity.
Assuming a 4 Gbps capable system, DS4700 Express provides up to 1550 MBps throughput with up to 121,500 input/output per second (IOPS). The DS4700 Express can help you free up or eliminate the need for additional host ports in the storage area network (SAN) for each array.

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

The DS4700 4 Gbps technology is backward compatible with 2 Gbps and 1 Gbps. You can add new technology incrementally rather than replacing your entire SAN with 4 Gbps technology. Note: 4 Gbps products will slow down to the 2 Gbps or 1 Gbps speed if they are connected, but zoning can allow a rolling upgrade strategy with minimal disruption.

Establish high data availability
Develop storage environments that can deliver unprecedented data availability with the help of DS4700 Express. Offering a choice of multiple redundant array of independent disks (RAID) levels and redundant, hot-swappable components, the disk storage system can help you maintain data availability and security.

Enhance resiliency with IBM disk storage systems. Powerful dynamic capabilities go beyond respond and recover to help protect data and prevent failure. Benefit from enterprise-class disaster recovery strategies and point-in-time copying with IBM FlashCopy® solutions.

The IBM DS4000 series allows flexible access to data to enhance information insights. 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. IBM DS4700 can help accommodate the changing value of data over time while maintaining data availability.

Increase performance
The DS4700 offers high-performance storage to help manage compute-intensive workloads. It is a great fit for both transaction-oriented and bandwidth-intensive applications. The DS4700 is also 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 DS4700 Express Model 72 has eight independent 4 Gbps Fibre Channel (FC) host ports for direct attachment to host (FC-AL) or fabric attachment to SANs (FC-SW). One of the first enterprise-class storage systems based on 4 Gbps FC technologies, the DS4700 can help you prepare for the future while making the most of your current infrastructure. It provides auto-negotiate FC connection speeds, allowing integration into an existing 1 Gbps or 2 Gbps infrastructure. The storage system can also deliver performance and connectivity improvements, while helping you prepare for when the SAN inevitably becomes 4 Gbps.

The four 4 Gbps drive connections support up to 112 disk drives with six attached DS4000 EXP810 disk enclosures. The DS4700 Express is designed to support more than 50.4 TB of Fibre Channel physical storage capacity. It
also expands its predecessor’s history of flexibility with another configuration option: cache size. The DS4700 is available in two models:

- **Model 70 is designed to support up to 2 GB of physical cache memory (1 GB per controller).**
- **Model 72 can support up to 4 GB of physical cache memory (2 GB per controller).**

The DS4700 runs the same robust, yet intuitive storage management software as previous storage systems in the series. It is designed to allow maximum utilization of storage capacity and complete control over a rapidly growing storage environment.

**Serve a wide range of storage consolidation and clustering applications**

IBM DS4700 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 enable 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 DS4700 can help consolidate direct-attached storage into a centrally managed, shared, or 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.

Expand your storage solution with the IBM System Storage EXP810 storage expansion unit, offering a 16-bay disk enclosure. Achieve up to 7.2 TB physical capacity per expansion unit using 16 Fibre Channel 450 GB disk drives, or up to 16 TB physical capacity per expansion unit using sixteen SATA 1 TB disk drives.

This expansion unit, which is NEBS-3 compliant, can accommodate the new optional 2 Gbps Fibre Channel Enhanced Disk Drive Modules (E-DDM). The unit contains redundant power and cooling modules, and Environmental Service Module (ESM) interfaces. Each ESM Customer Replacement Unit (CRU) supports 2 Gbps or 4 Gbps Fibre Channel host connections and a 4 Gbps Fibre Channel loop. Both 2 Gbps and 4 Gbps Fibre Channel disk drives are supported. A switch on the front of the unit enclosure selects the speed of the entire enclosure.

**Intermix and telco capabilities**

The DS4700 Express helps support an intermix of Fibre Channel and SATA disk drives within the controller. It also helps support attachment of EXP810, EXP710, and EXP100 to further enhance storage utilization.

The DS4700 Express Models 70S and 72S are NEBS-3 compliant and provide high-performance, high availability, business-critical storage, including dc-powered models that are especially suited for telecommunication industry environments.

**Scalability throughout the DS4000 series**

Because the DS4700 Express is designed to be highly scalable up to 112 Fibre Channel or SATA disk drives, it can be upgraded from a workgroup...
SAN to an enterprise network storage system to grow with your business. In addition, with IBM System Storage DS4000 Storage Manager software, multiple DS4700 Express systems can be combined to help address additional performance and capacity requirements.

Dynamic Capacity Expansion (DCE) provides the ability to add DS4000 EXP810 enclosures to an existing DS4700 Express without stopping operations. This can help you bring unused storage online for a new host group or an existing volume to provide additional capacity on demand.

The DS4700 Express 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 optional services such as DS4000 Remote Support Manager can often be executed without stopping operations.

**Centralize administration through DS4000 Storage Manager software**

The DS4000 Storage Manager software included with the DS4700 Express supports the centralized management of local and networked DS4000 series systems. Administrators can quickly configure and monitor storage from a Java™ technology-based Web browser interface. They can customize and change settings, 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 DS4000 Storage Manager. The DS4000 Storage Manager can help reduce the complexity of storage management and the amount of time spent managing storage.

**Enhance storage management capabilities**

Using the Storage Manager software, administrators can partition the DS4700 Express into as many as 128 virtual servers. Your IT organization can strategically allocate storage capacity to achieve high utilization of storage space, and low hardware and storage management costs. Instead of purchasing multiple RAID controllers with their own dedicated disks and management, you can attach multiple servers to one central system—the DS4700 Express—which provides hardware failover with dual controllers and common management.

Other DS4700 Express features that can help enhance data management and protection include:

- **FlashCopy**, which enables point-in-time copies of logical volumes that may be used for file restoration, backups, application testing or data mining.
- **Dynamic Volume Expansion**, which allows administrators to resize logical volumes without disrupting users.
- **VolumeCopy**, which provides full replication of one logical volume (source) to another (target) within the DS4700.
- **Enhanced Remote Mirror**, which 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.
The DS4700 Express uses a common pool of hot-spare disk drives as a cost-effective way to help improve availability. IT administrators can determine the number of drives to allocate as spares.

**Additional tools to help manage storage**

The DS4700 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 DS4700 by enabling backup and storage reporting.

The IBM System Storage Proven™ program identifies and tests many of these products for interoperability with the DS4700 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 [http://www.ibm.com/systems/storage/solutions/proven/](http://www.ibm.com/systems/storage/solutions/proven/)

**Service, support, and financing**

The DS4700 Express 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. IBM Support Line services can assist with using DS4000 Storage Manager to enable self-maintenance for the DS4000 system.

The optional DS4000 Remote Support Manager for Storage service enables the DS4700 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.

Financing is available through IBM Global Financing for a wide range of IBM products and services, including the DS4700 Express, for the duration of the financing term. This financing offers competitive rates, flexible terms, predictable costs and a fast approval process for DS4700 Express and associated software and services. For more information, please visit [ibm.com/financing](http://ibm.com/financing).
For more information
Contact your IBM representative or
IBM Business Partner, or visit:

- ibm.com/systems/storage/disk/
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- ibm.com/systems/express/storage

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/systems/storage/disk.