IBM System Storage DS5020 Express

Highlights

- **Next-generation 8 Gbps FC interfaces enable infrastructure simplification**

- **Mixed host interfaces support (FC/iSCSI) enables SAN tiering**

- **Balanced performance well-suited for virtualization/ consolidation**

- **Reducing the cost of consolidation**

- **Self-encrypting drives secure data throughout your drive's lifecycle**

- **Support for intermixing FC/FDE/SATA drives enables cost effective tiered storage**

- **Trusted storage that protects and delivers your data when needed**

- **Flexibility to address wide range of storage needs**

- **Feature-rich management software that maximizes utilization and minimizes storage TCO**

- **Key application certifications ensure confidence**

- **Centrally manage the DS series with the IBM System Storage DS Storage Manager**

- **Support up to 112 disk drive modules with the attachment of six EXP520 expansion units**

Manage data more effectively with IBM System Storage DS5020 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™ DS5020 Express™, designed to provide lower total cost of ownership, high performance, robust functionality, and unparalleled ease of use. As part of the IBM DS series, the DS5020 Express offers:

- *High-performance 8 Gbps capable Fibre Channel connections.*
- *Optional 1 Gbps iSCSI interface.*
- *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

Facing relentless data growth and shrinking budgets, companies continue to look for ways to reduce costs through efficiencies. 8 Gbps FC allows companies to reduce the number of HBAs per server and the number of overall ports in their FC SAN infrastructure without sacrificing performance, thus saving acquisition and operational costs.

Additionally, the DS5020's auto-negotiating 8 Gbps Fibre Channel interfaces allow it to seamlessly integrate into an existing 2 Gbps or 4 Gbps infrastructure, while providing the buyer with investment protection going forward when the SAN inevitably becomes 8 Gbps.

The DS5020's design avoids over-configuration for an affordable entry-point while offering seamless "pay-as-you-grow" scalability as requirements change. Its efficient storage utilization lowers raw capacity requirement, and support for intermixing high performance and high capacity drives enables enclosure-based tiered storage. These unique capabilities reduce the number of drives needed to meet performance and/or capacity demands—lower acquisition and operational expenditures.

Establish high data availability

Develop storage environments that can deliver unprecedented data availability with the help of DS5020 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 DS 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 DS5020 can help accommodate the changing value of data over time while maintaining data availability.

The DS5020 storage system offers redundant components, automated I/O path failover, and extensive online configuration, reconfiguration and maintenance capabilities to ensure your data is available 24x7. The DS5020 ensures stored data is protected as well. Self-encrypting drives secure data at rest with no performance penalty, DACstore technology stores configuration meta-data on each drive, Proactive Drive Health Monitoring (PDHM) technology identifies faulty drives before they create problems, RAID 6 technology guards against concurrent drive failures and errors, and persistent cache backup to ensure any data in cache is capture and safe in the event of a power outage. All of these features combine to create a system you can trust your data to.

Increase performance

The DS5020 offers high-performance storage to help manage compute-intensive workloads. It is a great fit for both transaction-oriented and bandwidth-intensive applications. The DS5020 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 DS5020 Express Model 20A has up to eight independent 8 Gbps Fibre Channel (FC) host ports for direct attachment to servers or fabric attachment to SANs. One of the first enterprise-class storage systems based on 8 Gbps FC technologies, the DS5020 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 2 Gbps or 4 Gbps infrastructure. The storage system can also deliver performance and connectivity improvements, while helping you prepare for when the SAN inevitably becomes 8 Gbps.

The four 4 Gbps drive connections support up to 112 disk drives with up to six attached EXP520 disk enclosures. The DS5020 Express is designed to support more than 50.4 TB of Fibre Channel physical storage capacity. The DS5020 is available with up to 4 GB of physical cache memory (2 GB per controller).

The DS5020 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.

In the same way customers have benefited from tiered storage (using high-performance FC drives for primary storage and low-cost SATA drives for secondary storage), they can now benefit from tiered SANs. IBM DS series storage systems offer high performance, highly reliable FC interfaces for production servers, and low-cost iSCSI interfaces for secondary servers. This combination allows customers to implement a single storage system to support all their shared storage requirements—maximizing productivity, reliability and costs.

Serve a wide range of storage consolidation and clustering applications

IBM DS5020 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 DS Remote Support Manager also help enhance the system's usability.

The DS5020 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 EXP520 storage expansion unit, offering a 16-bay disk enclosure. Achieve up to 9.6 TB physical capacity per expansion unit using 16 Fibre Channel 600 GB disk drives, or up to 16 TB physical capacity per expansion unit using sixteen SATA 1 TB disk drives.

EXP520 drive enclosure (1814-52A)

The EXP520 drive enclosure is more than "just-a-bunch-of-disks." It's designed to optimize performance, availability and serviceability.

- *4 Gbps FC interfaces for high-speed connectivity*
- *Up to 16 FC, FDE, or SATA disk drives.*
- *ESM-imbedded "loop switch"*
- *Redundant 4 Gbps FC drive loops ensure complete accessibility to all drives in the event of a loop or cable failure.*
- *Redundant power supplies, cooling fans and ESMs.*

All primary components are hot-swappable CRUs and can be easily accessed and removed or replaced.

Intermix capabilities

The DS5020 Express helps support an intermix of Fibre Channel and SATA disk drives within the controller. It also helps support attachment of EXP520 and legacy EXP810 enclosures to further enhance storage utilization.

The DS5020 Express Model 20A provides high-performance, high availability and business-critical storage.

Scalability throughout the DS5020

Because the DS5020 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 DS® Storage Manager Software, multiple DS5020 Express systems can be combined to help address additional performance and capacity requirements.

Dynamic Capacity Expansion (DCE) provides the ability to add EXP520 enclosures to an existing DS5020 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 DS5020 Express supports online controller firmware upgrades to help provide better performance and functionality. Events such as upgrades to support the latest version of DS Storage Manager or to add optional services such as DS Remote Support Manager can often be executed without stopping operations.

Centralize administration through DS Storage Manager Software

The DS Storage Manager Software included with the DS5020 Express supports the centralized management of local and networked DS5020 systems. 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 DS Storage Manager. The DS 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 DS5020 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

DS5020 Express—which provides hardware failover with dual controllers and common management.

Other DS5020 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 DS5020.*
- *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 DS5020 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 DS5020 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 DS5020 by enabling backup and storage reporting.
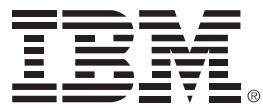
Service, support, and financing
The DS5020 Express is a customer set up disk system with a three-year, 9x5, next-business-day Hardware and Software warranty. Additional services for hardware installation, DS Storage Manager configuration, and advanced storage management are also available from IBM Global Services. IBM Support

Line services can assist with using DS Storage Manager to enable self-maintenance for the DS5020 system.

The optional DS Remote Support Manager for Storage service enables the DS5020 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 DS 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 DS5020 Express, for the duration of the financing term. This financing offers competitive rates, flexible terms, predictable costs and a fast approval process for DS5020 Express and associated software and services. For more information, please visit **ibm.com**/financing.

For more information

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

- **ibm.com**/systems/storage/
  disk/ds5020
- **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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