Scalable, high-performance storage for on demand computing environments

IBM TotalStorage® FAStT600 Storage Server

Wide range of storage consolidation and clustering applications
The IBM TotalStorage FAStT600 Storage Server is designed to be an affordable, scalable storage server for storage consolidation and clustering applications. Its modular architecture—which includes Dynamic Capacity Addition, Dynamic Volume Expansion and a turbo option—can support e-business on demand™ environments by enabling storage to easily grow as demands increase. Autonomic features such as online firmware upgrades and FAStT Service Alert also enhance the system’s usability.

Offering a maximum capacity of up to 8.2TB in the base model and 16.4TB with the turbo option, this server can help consolidate direct-attach storage into a centrally managed, shared or storage area network (SAN) environment. With built-in support for four Fibre Channel-attached servers, the need for additional switches is reduced or eliminated, helping to make server clustering more cost-effective.

IBM TotalStorage FAStT600 Storage Server

**Highlights**

- **Provides four 2Gb Fibre Channel host ports designed to economically support multipath failover for directly attached UNIX® and Intel® processor-based clustered servers**

- **Designed to deliver high performance of up to 768MB/sec throughput with turbo option**

- **Can help facilitate storage consolidation in storage area network (SAN), network attached storage (NAS) and direct-attach environments**

- **Supports multiple operating systems, including Microsoft Windows, AIX, Sun Solaris, HP-UX, Novell NetWare and Linux operating systems**

- **Includes FAStT Storage Manager to help centrally manage all FAStT storage subsystems**

- **Can help improve service response time with automated alerts from the optional FAStT Service Alert feature**

- **Supports up to 112 hard disk drives and scales up to 16.4TB of capacity with turbo option**
The FAST600 is well suited for cost-conscious workgroup SANs as well as small businesses and data centers. Designed specially for open systems environments, this storage system provides heterogeneous platform support by including failover drivers for the Microsoft® Windows® 2000 operating system and optional support for AIX®, Sun Solaris, HP-UX, Novell NetWare and Linux operating systems. The FAST600 can interoperate with IBM® @server™ pSeries™ and xSeries® servers as well as with Intel® processor-based and UNIX®-based servers. To help make integration easy, IBM tests the FAST600 for interoperability with IBM servers, as well as with other brands of servers and switches.

**Part of a family of storage servers**
The FAST600 is part of the FAST family of storage servers, which uses common storage management software and expansion enclosures. It is compatible with existing FAST EXP700 disk enclosures and includes many of the same high-performance software and redundant hardware design features as other FAST products in the family.

**Scalability throughout the family**
Because the FAST600 Storage Server can scale up to 112 disk drives and 16.4TB of capacity,² it can be upgraded from a workgroup SAN to an enterprise network storage system, thereby providing flexibility to grow with your business. In addition, using the FAST Storage Manager software, multiple FAST600 servers can be combined to help address additional performance and capacity requirements—further enhancing your scalability options.

Another scalability feature of the FAST600 is Dynamic Capacity Expansion (DCE), which provides the ability to add EXP700 enclosures to an existing FAST600 without stopping operations. By adding these enclosures, the FAST600 can bring unused storage online for a new host group or an existing volume to provide additional capacity on demand.

Upgrades to higher performing FAST600 Storage Servers can be performed while keeping data intact, helping to minimize disruptions during upgrades. The FAST600 also supports online controller firmware upgrades, to support greater performance and functionality. Events such as upgrades to support the latest version of FAST Storage Manager or to add services such as FAST Service Alert also can typically be executed without stopping operations.

**High-performance design further enhanced by turbo option**
To meet growing needs for storage capacity and performance, the FAST600 Storage Server may be upgraded with the turbo option, which includes Storage Manager version 8.4 (the base model includes version 8.3). The turbo option extends the high-availability and scalability characteristics of the entry-level FAST600 base model, and may be added during the initial order or later as an upgrade. Both the base model or with turbo option offer high-performance, low-cost storage and the flexibility to grow with your business.

FAST600 Storage Servers use advanced caching algorithms to help optimize disk performance. The base model can deliver more than 45,000 cached I/Os per second and up to 400MB/sec throughput in streaming disk reads. Using Storage Manager 8.4, the FAST600 with turbo option...
**IBM FASTT600 Storage Server at a glance**

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<th>Characteristics</th>
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<tr>
<td><strong>Model</strong></td>
<td>1722-60U</td>
</tr>
<tr>
<td><strong>RAID controller</strong></td>
<td>Dual active 2GB RAID controllers</td>
</tr>
<tr>
<td><strong>Cache</strong></td>
<td>Base model: 512MB total, battery-backed</td>
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<tr>
<td></td>
<td>With turbo option: 2GB total, battery-backed</td>
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<tr>
<td><strong>Host interface</strong></td>
<td>4 Fibre Channel (FC) Switched and FC Arbitrated Loop (FC-AL) standard</td>
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<tr>
<td><strong>Drive interface</strong></td>
<td>Base model: 2Gbps FC-AL</td>
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<tr>
<td></td>
<td>With turbo option: Auto-sensing 1Gbps/2Gbps FC-AL</td>
</tr>
<tr>
<td><strong>Supported drives</strong></td>
<td>36.4GB, 73.4GB and 146.8GB 10,000 rpm</td>
</tr>
<tr>
<td></td>
<td>18.2GB, 36.4GB and 73.4GB 15,000 rpm</td>
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<tr>
<td><strong>RAID levels</strong></td>
<td>0, 1, 3, 5, 10</td>
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<tr>
<td><strong>Storage partitions</strong></td>
<td>Base model: 1, upgradeable to 8 or 16</td>
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<tr>
<td></td>
<td>With turbo option: 8, upgradeable to 64</td>
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<tr>
<td><strong>Maximum drives supported</strong></td>
<td>Base model: 56 (using three EXP700 Expansion Units)</td>
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<tr>
<td></td>
<td>With turbo option: 112 (using seven EXP700 Expansion Units)</td>
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<tr>
<td><strong>Fans and power supplies</strong></td>
<td>Dual redundant, hot-swappable</td>
</tr>
<tr>
<td><strong>Rack support</strong></td>
<td>19-inch, industry-standard rack</td>
</tr>
<tr>
<td><strong>Management software</strong></td>
<td>IBM FASTT Storage Manager versions 8.3 and 8.4</td>
</tr>
<tr>
<td><strong>SAN support</strong></td>
<td>Supported IBM FC switches and directors (product numbers 2109, 3534, 2031, 2032, 2042 and 2062)</td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td>3-year parts and labor warranty, next-business-day response; upgradeable to 24 x 7 support with 4-hour response</td>
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**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**

For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the FASTT600 Interoperability Matrix available at [ibm.com/storage/fast600](http://ibm.com/storage/fast600).

The FASTT600 Storage Server is supported only in rack installations. With optional features, up to three FASTT EXP700 Expansion Units can be attached to the FASTT600 enclosure for a maximum of 56 drives. With the turbo option feature, up to seven FASTT EXP700 Expansion Units can be attached to the FASTT600 enclosure for a maximum of 112 disk drives.
performs at more than 75,000 cached I/Os—a 70 percent improvement—and provides up to 768MB/sec throughput.

The FASTT600 Storage Server can support up to 56 disk drives when using three FASTT EXP700 disk enclosures; with the turbo option, it can support up to 112 drives when using seven FASTT EXP700 disk enclosures. The base model offers up to 8.2TB of storage capacity and up to 16 storage partitions. By adding the turbo option, the FASTT600 can support up to 16.4TB of capacity and up to 64 storage partitions.

Other features of the turbo option include an increased cache size of 2GB and an auto-sensing capability to detect host connectivity speed. This auto-sensing capability adds support for 1Gbps Fibre Channel connectivity to the base model’s 2Gbps Fibre Channel interface, allowing the FASTT600 to support a wider range of devices and thus provide greater interoperability. The turbo option also extends the copy services capabilities of the FASTT600 by including the VolumeCopy feature, which enables full replication of logical volumes for enhanced data management and protection.

**Centralized administration through FASTT Storage Manager**

The FASTT Storage Manager software included with the FASTT600 Storage Server supports centralized management of all local and networked FASTT storage systems. Using Storage Manager, administrators can quickly configure and monitor storage from a simple, Java™-based Web browser interface. They also can customize and change settings on the fly 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 FASTT Storage Manager.

By providing these features and an intuitive user interface, the FASTT Storage Manager can help reduce the complexity of storage management and the amount of time spent managing storage.

The turbo option includes Storage Manager version 8.4, which is designed to support up to 256 logical volumes per storage partition, array groups greater than 2TB and the SCSI-3 Persistent Reservation facility for enhanced server clustering applications. These additional capabilities help the FASTT600 to support larger storage environments.

**Enhanced storage management capabilities**

The IBM TotalStorage FASTT600 Storage Server has several features designed to improve data management and storage system performance. Using the FASTT Storage Manager software, administrators can partition the FASTT600 Storage Server into as many as 16 virtual servers; with the turbo option, they can create up to 64 partitions. 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 FASTT600—which provides hardware failover and common management.
Other FAST600 features that can help enhance data management and protection include FlashCopy®, Dynamic Volume Expansion and Volume Copy.

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

- **Dynamic Volume Expansion** enables administrators to resize logical volumes without disrupting users. This feature works well for applications with rapidly growing data requirements, such as Lotus Notes® and Microsoft Exchange.

- **Available only with the turbo option, the VolumeCopy feature** provides full replication of one logical volume (source) to another (target) within the FAST600 Storage Server. During the copy process, VolumeCopy allows read-only access to the source volume, and writes are suspended to support point-in-time integrity.

- **Multiple FAST600 systems can use a common pool of hot-spare disk drives as a cost-effective way of improving availability, even if the FAST600 systems are attached to different servers.** IT administrators can determine the number of drives to allocate as spares.

**Additional tools to help manage storage**

The FAST600 Storage Server 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 add to the capabilities of the FAST600 by enabling backup and storage reporting.

The IBM TotalStorage Proven™ program is designed to identify and test these products for interoperability with the FAST600 and other IBM disk products. Products in this program have been tested to help eliminate time-consuming installation and support issues. For more information, please visit [ibm.com/totalspace/proven](http://ibm.com/totalspace/proven).

**Service and support**

FAST600 Storage Servers have a three-year hardware warranty. Additional services for hardware installation, FAST600 Storage Manager configuration and advanced storage management are also available from IBM Global Services (IGS). IBM SupportLine services can assist with using FAST600 Storage Manager, enabling customers to self-maintain their FAST600 Storage Server.

The optional FAST600 Service Alert feature enables the FAST600 to quickly notify the IBM Support Center of problems when they occur, helping to reduce or eliminate the need for the customer to place a service call. This feature is capable of forwarding error alert messages (via e-mail) from FAST600 Manager to IBM, expediting 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 FAST600 Storage Server, for the duration of the financing term. For more information, please visit [ibm.com/financing](http://ibm.com/financing).
High-performance storage for the on demand world

The features of the FASTT600 Storage Server—including the turbo option—further enhance the functionality, flexibility and scalability of the IBM FASTT product family. As a high-performance Fibre Channel storage system, the FASTT600 is designed to enable fast, responsive applications that can help improve transaction rates and customer satisfaction.

The performance, capacity and data management and protection capabilities of the FASTT600 not only can help address the storage needs of today, but also provide a base for continued growth to meet future storage requirements. By combining these capabilities with a design focused on high reliability, manageability and affordability, the FASTT600 Storage Server offers a cost-effective storage system for the on demand world.

For more information

For more information, contact your IBM representative or IBM Business Partner. In the United States or Canada, you also can call IBM Direct: 1-800-IBM-CALL (1-800-426-2255). Or visit ibm.com.

For more product information and country-specific phone numbers for those outside the U.S. and Canada, please visit ibm.com.