

**First In
Storage Solutions**

**IBM TotalStorage
FAStT700 Storage Server**

**Presentation
Guide**



Foil 1

IBM TotalStorage FAStT700 Storage Server

The FAStT700 Storage Server expands the family of FAStT highly scalable Fibre Channel (FC) offerings from IBM. This new third generation offering brings greater performance and advanced functionality to Intel-based servers in the midrange to high-end market as part of a heterogeneous storage area network (SAN). With this solution, IBM is extending its native Fibre Channel disk offerings to address the needs of the Intel-based storage markets. IBM has a full array of storage systems that address the needs of the market from the low-end to the high-end storage market place.

Foil 2

FAStT700 - At a Glance

This is the high-level overview of the FAStT700 technology. The FAStT700 Storage Server is SAN ready, and Fibre Channel enabled from the controller connectivity down to the disk drive connectivity.

The dual 2Gbps RAID controllers and 133Mhz 2Gb Host Bus Adapter make it a very high performance storage server for Intel based environments in the midrange, and high-end disk storage product market.

With the new 146.8GB 10K HDD you can see the scalability here that goes from a single disk drive of 36 gigabytes up to 32.8 terabytes. You'll see later when we do a competitive comparison, that this is better than anything that our competitors can offer today in comparable kinds of products.

As you would expect, FAStT700 has the high availability features that our customers have come to expect and demand from us. FAStT Storage Manager v8.21 is a powerful, intuitive storage management tool that supports FlashCopy, and Remote Mirroring which gives you increased data protection options. Dynamic Volume Expansion has also been added to help simplify your data management

needs. There's significant investment protection within the FAStT family. The EXP500 / EXP700 expansion units or disk drive enclosures used on FAStT700 are the same ones used on FAStT200, and FAStT500. So customers are able to protect the investment they make in their disk storage capacity. Again, a very strong statement from IBM and another significant competitive advantage for you.

Foil 3

FAStT700 Features

Let's move to a little more detail now on the FAStT700 Storage Server itself. You can see from the chart there is a number of unique characteristics and features of the FAStT700. We delivered this support through dual 2Gbps RAID controllers. Both controllers are active, and provide fail-over. These controllers support up to 64 storage partitions. Without storage partitioning, the logical drives configured on a FAStT Storage Server could only be accessed by a single host system or by a single cluster. This can surely lead to inefficient use of Storage Server hardware. Storage partitioning, on the other hand, allows you to create sets, containing the hosts with their host bus adapters and the logical drives. We call these sets storage partitions. Now the host systems can only access their assigned logical drives, just as if these logical drives were locally attached to them. You can therefore connect multiple hosts or clusters to the same FAStT Storage Server. So FAStT700 can support up to 64 partitions.

And of course it provides heterogeneous support with an inner mix of Intel-based, IBM AIX and other UNIX operating systems.

Please refer to the FAStT700 home page for a detailed listing of the Supported Servers and operating systems. That page is **ibm.com/storage/fast700**.

The RAID levels supported are quite a rich mix of 0,1, 3, 5, and 10. The RAID controllers themselves come with 1GB of battery-backed cache each for a total of 2GB of cache. FAStT700 also supports global hot-spares. The power supplies and fans are redundant and hot-swappable providing high availability features. It supports up to 224 Fibre Channel disks .

Foil 3 continued

FAStT700 Features

FAStT700 is managed with FAST STORAGE MANAGER V8.21 . Version 8.21 is what's shipping with FAStT700. The FAST STORAGE MANAGER V8.21 is a comprehensive management tool complete with performance and diagnostic tools . SM8.21 also enables our advanced Flashcopy and Remote Mirror function.

FlashCopy provides a lightning-fast, single-point-in-time copy of all stored data and ensures performance of normal SAN operations. Remote Mirroring creates a mirror of volumes across - Fibre Channel fabric between primary and backup FAStT700 Storage Servers. Dynamic Volume Expansion resizes logical volumes without interruption of other logical volumes.

The new FAST FC2-133 Host Bus Adapter is a 64-bit, half-length, low profile, PCI-X host adapter. It features 2Gb/s technology and autosenses 1Gb/s or 2Gb/s operation. You are able to hot-plug and hot-add without powering down the server. Supports point-to-point, FC-AL, FC-AL-2, and switched Fabric topologies with Fibre Channel SCSI and IP protocols.

Foil 4

FAStT700 Benefits

A great solution for storage consolidation: the ability for customers to use one single asset to provide full capacity to a number of different servers in a heterogeneous environment. FAStT700 provides excellent data protection on a number of different fronts addressing customer requirements for consistent and constant data integrity. Up to 64 host systems, multiple RAID levels, LUN masking, redundant, hot-swap components, and the ability to automatically fail-over to maintain I/O activity for customers environments.

Performance on FAStT700 is stellar. The ability to share a storage system across the servers and being able to manage multiple subsystems from a single location helps conserve customer resources and of course, contributes to reduced total cost of ownership. FAStT700 is a high performance, highly scalable product, easy to use with its management interface, and all wrapped in a traditional nine-to-five, next

IBM FAStT700 Storage Server

business day 3 year warranty. 24 hour by 7 day coverage with a 4 hour response time can be purchased. Also, Microsoft Cluster Service and NetWare Cluster Service are supported.

Foil 5

Storage Manager Highlights

On the FAStT700, the Storage Manager version 8.21 offers fast data duplication with FlashCopy as well as Remote Mirroring for disaster recovery or those unexpected outages.

Storage Manager version 8.21 is shipping with the FAStT700. The Storage Manager is used to configure, manage and troubleshoot the FAStT Storage Servers. It is a java-based GUI management tool and is very simple to install, and provides all of the functions that customers need to manage there FAStT installations.

The interfaces provide management either in-band or out-band. That is, it can manage FAStT Storage Servers that are directly attached or through the IP network. A number of different client agents can be installed on various servers to look at and manage the FAStT storage. Version 8.21 provides Dynamic Volume Expansion -meaning that you can increase the capacity of the LUNs on the fly without shutting off the system. It also provides the ability to change the RAID levels of the drive groups and change the stripe sizes on the fly.

As you would expect, the Storage Manager has a number of different methodologies and interfaces for error reporting and problem management. One management tool is the Event monitor, which performs storage server monitoring and in case of any critical events it sends alerts via e-mail (SMTP) or traps (SNMP). Supports 64 partitions and up to 2048 LUNs. Up to 32 logical drives per partition.

Foil 6

FAStT EXP500

One of the great advantages of the EXP500 expansion unit is that it attaches to all three FAStT Storage IBM FAStT700 Storage Server

Servers. The FAStT200, FAStT500, and the FAStT700 are all compatible with this expansion unit, that's great investment protection. This is a 10-disk drive enclosure that uses solely Fibre Channel arbitrated loop disk technology. The drives supported are quite broad from 18 , 36, 73, and the new 146.8GB gigabyte 10K rpm drives, to the faster 15K rpm 18 and 36.4GB drives. See chart. These are all hot-swappable components and fit very nicely in the 2101-200, 7014 or NetBay racks. Similar to the FAStT700 Storage Server, The EXP500 has a 3-year standard nine-to-five warranty with 24 hour by 7 day with 4 hour response time coverage available for purchase.

Foil 7

By adding the newest member of the FAStT product family to our mix - the EXP700, we add full 2Gb attachment all the way through our FAStT700 solution. Once again to protect our customers investment the EXP700 will attach to the FAStT200, FAStT500, and FAStT700. We can intermix EXP500 and EXP700 enclosures. When intermixed the EXP700 will connect at 1Gb data rate.

The EXP700 supports up to 14 slim 2GB hot-swap FC drives. The drives supported are 36.4GB / 73.4GB / **146.8GB** 10K RPM and 18.2GB / 36.4GB 15k RPM drives. See chart. These are all hot-swappable components and fit very nicely in the 2101-200, 7014 or NetBay racks. Similar to the FAStT700 Storage Server, The EXP700 has a 3-year standard nine-to-five warranty with a 24 hour by 7 day 4 hour response time coverage available for purchase. The EXP700 uses Fibre Channel LC style connectors.

Foil 8

FAStT700 Supported Environments

This page shows all the supported operating systems, servers, SAN components, and clustering support. IBM AIX, HP-UX and Sun Solaris supported has recently been added.

Foil 9

FAStT700 Competitive Matrix

IBM FAStT700 Storage Server

This chart shows a competitive position and comparison of the FAST700 product. The areas that are highlighted in color are either equivalent or best of breed functions. What really stands out here as most significant is the scalability range of the FAST700 product, with up to 32.8TB it certainly is a true leader.

Foil 10

FAST700 High Availability Configuration

This picture shows how to implement a high availability configuration. Each host server has dual host bus adapters and they are connected to each of the two controllers in the FAST700 Storage System. If one the HBA's fail, or if a path fails, the FAST700 remains operational via the alternate path.

The FAST700 Storage Server comes standard with 2 mini-hubs on the host side and two mini hubs on the drive side. Each mini-hub has two connectors, or ports. If you have two servers attached to the FAST700 and want to implement HA (High Availability), then two HBAs should be used per server . From each server there should be a connection to both of the mini-hubs. With an additional two mini-hubs , there can be 8 direct server connections.

The FAST EXP500 or EXP700 expansion units house all the disk drives. They attach to the drive side mini-hubs that come standard with the FAST700. Each mini-hub supports one drive loop with 2 mini-hubs creating a fully redundant fibre loop. With two additional mini-hubs, the FAST supports 2 dual redundant drive loops. The picture shows one dual redundant loop. As only 2 mini-hubs come standard with the FAST700, for two fully redundant loops 2 additional mini-hubs would have to be ordered.

Foil 11

FAST700 in a Switched Fabric SAN

This picture shows how you would need to configure a FAST700 in a SAN environment with a switch.

Foil 12

FAST Storage Partitioning

IBM FAST700 Storage Server

Storage partitioning allows you to connect multiple host systems to the same storage server. It is a way of assigning logical drives to specific host systems or group of hosts, this is also known as LUN masking. Logical drives in a storage partition will only be accessible by their assigned host or group of hosts. Heterogeneous host support means that the host system can run different operating systems. You can assign up to 32 LUNs in each partition. The maximum number of supported partitions is 64 with the maximum number of LUNs being 2048 per FAStT700 Storage Server.

Foil 12

Disclaimers

Self explanatory.

Foil 13

Trademarks

Self explanatory.