

*A high-performance disk storage solution for systems  
across the enterprise*



## **IBM® TotalStorage® Enterprise Storage Server® Model 800**



### **e-business on demand**

The move to e-business on demand™ presents companies with both significant opportunities and critical challenges. A whole new world of potential customers, automated and streamlined processes and new revenue streams are being fueled by the on demand world. Consequently, companies also face increasing requirements for more information to be universally available online, around the clock, every day of the year.

To address the unique requirements of the on demand world—where massive swings in the demands placed on storage systems are common and continuous operations is imperative—companies must deploy high performance, autonomic, intelligent storage technologies that can offer data protection and functions to support continuous availability.

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### **Highlights**

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- ***Supports storage sharing for a wide variety of heterogeneous operating environments***
- ***Supports fast data transfer rates through a wide variety of host attachment applications***
- ***Designed to provide outstanding performance scaling up to 55.9TB***
- ***Helps increase administrative productivity through efficient, centralized management***
- ***Offers high availability to support mission-critical business applications***

The IBM TotalStorage Enterprise Storage Server (ESS) helps set new standards in performance, automation and integration as well as capabilities that support continuous availability to data for the on demand world. This storage system also supports many advanced copy functions, increasing data availability during planned outages and for protecting data from planned and unplanned outages. These functions provide important disaster recovery and backup protection.

### **Shared storage for major server platforms**

Many types of server platforms can concurrently attach to the ESS—including @server iSeries and AS/400; Linux, Novell NetWare, Windows NT, Windows 2000, Microsoft Windows Server 2003 or SGI Origin® servers with IRIX OS; @server zSeries and S/390; and many types of UNIX servers. As a result, ESS is suitable for growing organizations with multiple heterogeneous servers.

### **Advanced copy functions for business continuance**

With more business-critical information processing being performed on distributed systems (running several different operating systems), the ESS offers outstanding value while deliv-

ering excellent performance. The ESS does more than simply enable shared storage across enterprise platforms—it can improve the performance, availability, scalability and manageability of enterprise-wide storage resources through a variety of advanced copy options:

#### **FlashCopy V1**

FlashCopy V1 provides an advanced, fast replication facility that can help reduce application outages needed for backups and other copy applications.

#### *FlashCopy V1 NOCOPY option*

FlashCopy's "copy on write" NOCOPY option allows flexible reuse of disk capacity that would otherwise be dedicated to copy operations. With the NOCOPY option, rather than a physical byte-for-byte copy of the source volume, the only data copied to the target is that which is about to be changed or overlaid by the application.

#### **FlashCopy V2**

The ESS now supports FlashCopy V2, which includes all the features of FlashCopy V1 as well as many enhancements designed to improve capacity management and utilization. Among these enhancements are:

#### *Data Set FlashCopy*

This feature offers a new level of granularity for the z/OS environment, allowing more efficient use of the ESS capacity. Data Set FlashCopy allows the source and target copy to be different sizes and allows the copied data to reside at a different location in the volume.

#### *Multiple Relationship FlashCopy*

This function allows a volume to participate in multiple FlashCopy relationships (up to 12 simultaneous relationships), so that multiple copies of the same data can be made for testing, backup and other applications. This feature offers increased flexibility and improved capacity management and utilization.

#### *Incremental FlashCopy*

Incremental FlashCopy offers the ability to track and record changes that are made to the source and target volumes after the establishment of FlashCopy relationships. This allows the capability to refresh a LUN or volume to the source or target's point in time content using only the changed data. The refresh can occur in either direction. It offers improved flexibility and faster FlashCopy completion times.

### **Peer-to-Peer Remote Copy (PPRC) V1**

PPRC V1 includes a synchronous remote data-mirroring technique designed to constantly maintain a current copy of the local application data at a remote site.

PPRC-XD (Extended Distance) is included in PPRC V1 is designed to provide an asynchronous remote copy function that is appropriate for remote data migration, offsite backups and transmission of inactive database logs at virtually unlimited distances.

### **Peer-to-Peer Remote Copy (PPRC) V2**

Peer-To-Peer Remote Copy (PPRC) V2 includes all of the functionality of PPRC V1 in addition to the following:

#### *Asynchronous cascading function*

This is a copy function for all supported ESS servers, z/OS and open systems. It maintains a remote copy of data asynchronously at virtually unlimited distances via 2 or 3 site cascading. It is designed to provide a high-performance long distance data replication and disaster recovery/backup solution.

#### *PPRC support of Fibre Channel*

This allows the communications link between the PPRC primary and secondary ESS Model 800s to be Fibre Channel. The support of Fibre Channel for the PPRC link may allow a significant reduction in the PPRC link infrastructure when compared to ESCON, while delivering equivalent or better performance.

### **Extended Remote Copy (XRC)**

XRC is a copy function available for the z/OS and OS/390® operating systems. It maintains a copy of the data asynchronously at a remote location over unlimited distances, and is designed to provide the same high throughput and data protection regardless of the distance to the secondary site.

### **High availability to safeguard data access**

Support for 24 x 7 operations is built into the ESS. The ability to implement RAID-5 and RAID-10 disk arrays helps provide data protection while remote copy technologies allow fast data backup and disaster recovery. The ESS features dual active processing clusters with failover switching, hot spares, hot-swappable disk drives, mirrored write cache and redundant power and cooling.

The ESS also contains integrated proactive self-diagnostics to help prevent downtime by constantly monitoring system functions.

For example, Predictive Failure Analysis can proactively notify you of pending issues with select hardware components so that you can remedy difficulties before they affect performance.

A technician can be dispatched to make repairs, often before the problem is noticed by data center staff. Maintenance—including licensed internal code upgrades—typically can be performed without interrupting operations.

### **Built-in flexibility**

The ESS is designed to provide outstanding flexibility, including intermixable disk sizes and speeds to optimize price/performance/scalability; intermixable RAID-5 and RAID-10 protection; independent scalability of disk capacity, cache size and host attachments; customer-controlled logical volumes sizes and online reassignment of capacity among servers.

### **Scalability for fast-growing environments**

The ESS is well suited for e-business and other applications with unpredictable growth requirements. It is designed to provide high scalability while maintaining excellent performance.

Disk drives for the ESS are provided as integrated packages of eight disk drives (known as eight-packs). Disk drive capacities include 10,000 rpm 18.2GB, 36.4GB, 72.8GB and 145.6GB drives and 15,000 rpm 18.2GB, 36.4GB and 72.8GB drives.

ESS Model 800 can be configured with up to 384 disk drives, when used with 145.6GB disks, yields a physical capacity of up to 55.9TB.

### **Delivering storage networking value**

ESS adds value to Storage Area Networks (SANs). The ESS handles the basics well, including high-speed 2 Gigabit Fibre Channel attachments, the ability to share each Fibre Channel port among heterogeneous servers and built-in support for LUN masking (SAN security). And the ESS goes further, supporting a Network Attached Storage (NAS) gateway that allows the ESS to handle simultaneously both traditional block I/O over a SAN as well as file I/O over a TCP/IP network.

### **Total cost of ownership**

ESS is an excellent choice to help lower costs. Key ESS features such as advanced business continuance functions, performance, scalability, ability to mix and match drive capacity and speeds, heterogeneous connectivity and the flexibility offered by an open software architecture provide a few reasons why ESS offers excellent value. It is an excellent choice for storage consolidation and an intelligent choice when evaluating TCO.

### **IBM @server integration**

The business continuance capabilities of the IBM TotalStorage Enterprise Storage Server are further integrated with new functions in Geographically Dispersed Parallel Sysplex™ (GDPS) environments. The GDPS Open LUN Management capability can provide a cross-platform disaster recovery capability across both @server zSeries and open systems data. Additionally, it is an excellent choice for storage consolidation and an intelligent choice when evaluating TCO performance for S/390 and zSeries servers.

### *Parallel Access Volumes*

Previous S/390 systems allowed only one I/O operation per logical volume at a time. Now, performance can be improved by enabling multiple I/Os from any supported operating system to access the same volume at the same time.

### *Multiple Allegiance*

This feature is designed to enable different operating systems to perform multiple, concurrent I/Os to the same logical volume—helping to reduce queuing and significantly increasing performance. By enabling the ESS to process more I/Os in parallel, Multiple Allegiance and optional Parallel Access Volumes can help dramatically improve performance and enable more effective use of larger volumes. This can result in simplified storage management at a reduced cost.

### *Priority I/O Queuing*

The storage server helps important jobs gain priority access to storage resources. With Priority I/O Queuing, the ESS uses information provided by the OS/390® Workload Manager to manage the sequence in which I/Os are processed—matching I/O priority to application priorities.

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## IBM TotalStorage Enterprise Storage Server Model 800

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Physical disk storage capacity	582GB to 55.9TB
Cache size	8, 16, 24, 32 or 64GB
Host server attachments	Up to 32 SCSI or ESCON ports, up to 16 Fibre Channel/FICON ports, and intermix configurations

### Physical characteristics

Dimensions	75.25" H x 54.50" W x 35.75" D (1913 mm x 1383 mm x 909 mm)
Weight	2,200 lb. (998 kg)

### Operating environment

Temperature	60° to 90° F (16° to 32° C)
Relative humidity	20% to 80%
Wet bulb maximum	73° F (23° C)
Caloric value	16,000 BTU/hr
Power supply	Three phase 50/60 Hz
Electrical power	6.4 kVA

### Supported systems<sup>1</sup>

S/390 and zSeries (z/OS, OS/390, VM, VSE, TPF, Linux); AS/400 and iSeries; Compaq; DEC; Hewlett-Packard; Intel® processor-based servers (Novell NetWare, Linux, Windows NT, Windows 2000, Windows Server 2003); RS/6000®; RS/6000 SP™; pSeries; Sun™; and SGI Origin servers (IRIX)

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### A complete management solution

The IBM TotalStorage software family of products offers an integrated storage management toolset that enables storage administrators to centrally monitor and manage the ESS.

The IBM TotalStorage Enterprise Storage Server Specialist helps storage administrators control and

manage storage assets for the ESS.

With a browser interface, storage administrators can access the ESS Specialist from work, from home or on the road through a secure network connection.

The IBM TotalStorage Enterprise Storage Server Expert helps storage administrators monitor the performance of all connected IBM Enterprise Storage Servers in the enterprise.

This innovative software tool provides performance statistics and flexible asset management, and tracks a variety of capacity information through a common, available browser interface. As such, this optional tool enables administrators to centrally manage all Enterprise Storage Servers located anywhere in the enterprise.

**For more information**

For more information, contact your  
IBM representative or IBM Business  
Partner, or visit  
**ibm.com**/totalstorage/ess.



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GB equals one billion bytes when referring to hard drive capacity; accessible capacity may be less.

Product data is accurate as of initial publication and is subject to change without notice.

<sup>1</sup> For more details on supported servers, visit **ibm.com**/totalstorage/ess.