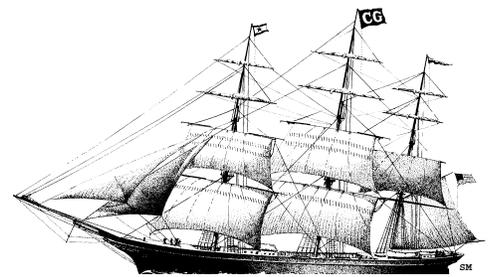


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IBM's New Sharks Deliver Supercharged Efficiency

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Management Summary

The last thing an enterprise executive cares to hear about is more “technology leadership”, especially given the cost constraints driven by today’s economy. However, if that technology maps directly into business efficiency with added value for enabling business growth, prudent decision-making dictates a careful hearing. IBM Storage Systems introduces the *TotalStorage Enterprise Storage Server (ESS) Model 800* (standard and Turbo) with enhancements that require such a hearing.

With the new models 800 and 800Turbo, IBM's TotalStorage ESS, commonly referred to as Shark, deliver its latest in a continuing series of enhancements that are rapidly positioning it as the clear choice for enterprise efficiency. This latest upgrade delivers industry-leading performance and scalability to nearly 28 TBs of storage for high-volume online transaction and database applications. Together with the advanced function software, IBM says that these models provide the industry’s best response time for synchronous remote copy; shorten the requirements for batch windows through a highly-efficient point-in-time copy feature; and enable secondary background copies.

IBM extends the value of its storage technology by delivering TotalStorage solutions with integrated hardware, software, and services. A new pricing scheme is introduced with the Models 800 for Shark’s advanced feature storage software, increasing the pricing granularity based on the actual physical capacity of the storage system. Unique self-managing features, derived from IBM’s autonomic storage initiative, *Project eLiza*, reduce demands on storage administrators, increasing their productivity. These features support dynamic service levels, “on-the-fly” self-configuring, and self-healing to assure business continuance. **By exploiting its underlying technologies, the Models 800 reduce the stress on a critical enterprise asset, the system administrator.**

Storage solutions must retain the flexibility to respond to changing markets as they influence enterprise applications. IBM is initially targeting two significant emerging, high growth markets that will benefit substantially from enhancements delivered in this upgrade. The Life Sciences market spans medical research and discovery, clinical development, and medical imaging. The Digital Media market covers the creation of digital content, managing that content, and distributing that content to a variety of users. Each of these activities requires handling and managing very large volumes of data. Enterprises developing and implementing these applications will find that IBM’s *TotalStorage ESS Models 800* deliver integrated solutions against well-researched requirements.

Current enterprise applications, such as ERP, CRM, SCM, and data warehousing applications, also will benefit from the enhancements delivered in the two Models 800. Traditional requirements for high availability, scalability, data protection, disaster tolerance, and data sharing with integrity and high performance are enhanced in this upgrade from the prior *ESS Model F20*.

In a period when many vendors are struggling to either enhance their software portfolio or to deliver an improved hardware product, IBM delivers both. **The ESS Models 800, with Advanced Function Software, provide super efficiency with highest quality of service contributing to a superior total cost of ownership.** Read on to get the details.

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Increased Efficiency - Doing Many Things Well

Efficiency has been a focus of business operations for some time. Most of the “big levers”, those big opportunities- that generate large improvements in efficiency, have already been implemented. Most enterprises, however, continue the search for less costly and more efficient ways of growing revenue and profits.

Technology infrastructure has not been overlooked in this search for efficiency. A variety of consolidation efforts involving servers, applications, and storage devices have produced gains in efficiency. Vendors have delivered devices and system applications that improve efficiency in targeted areas. Unfortunately for the enterprise, gaining these efficiencies has required investment in many different hardware and software packages from multiple vendors.

With the *TotalStorage Enterprise Storage Server Models 800 and 800Turbo*¹, IBM delivers a single storage solution that integrates a wide variety of efficiency enhancements. These enhancements provide benefit to business groups that depend on high levels of application performance. They also benefit the operations organization through improved use of resources, continued asset protection, and reduced systems administration.

It is a truism of the IT industry today that while technology enhancements continue to evolve as rapidly as ever, **there is a diminishing appetite for technology for technology's sake.** Where just two years ago enterprises were willing to explore the value of new hardware and software technology, to hire consultants and expert advisers, to invest expansively in capital assets, today those actions are considered high risks. Cash for such investments is now tightly restricted. Business revenue and profit no longer justify efforts that are more likely to miss than hit efficiency targets.

IBM's ESS Models 800 provide incentives and benefits that easily justify additional capital expense. Let's see how this is accomplished.

¹ “Models 800” refers to both new models of this family. The Turbo model incorporates two additional servers to deliver even greater throughput than the Model 800.

Efficiency for Applications

Some existing applications are pushing against the upper bounds of systems on which they operate. Some of these boundaries are set by limitations within the storage system and may constrain the application that uses it. On-line transaction applications may perform well on a specific storage system, but query-based database applications may suffer in throughput. Some storage systems are designed to handle traditional requirements but cannot also support heavy volumes of activity in newer and emerging applications, such as Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) and Supply Chain Management (SCM). **The Models 800 will deliver industry-leading scalability and throughput to a wide range of existing and emerging applications.**

The earlier version of IBM's ESS, the Model F20, was competitive with alternatives from other vendors. The enhancements provided with the Models 800 make it the leading offering for many enterprise needs.

- For all users, the Model 800 provides up to 40% reduction in response time and up to two times the throughput of the Model F20. (The Turbo model provides up to 2.5 times the throughput.)
- For database applications that depend on availability of large cache, the Models 800 provide up to 64 GB of cache, delivering up to 25% greater service time.
- Using the new 2 Gb fibre interconnect technology, Models 800 provide up to 2 times the read and write bandwidth available in 1 Gb solutions. For mainframe applications, FICON technology provides up to two times competitive configurations.
- For applications that depend on the ability to create synchronous copies, the Models 800 extend IBM ESS's leadership, providing 125% greater throughput than the Model F20.
- Application back-up windows will benefit from an improved FlashCopy capability that reduces the time to

create point-in-time copies by up to 50%.

- Creating secondary copies to optimize business intelligence operations is improved through a background copy rate increase of nearly 30%.

Focus on Emerging Applications

Emerging application areas that have a significant dependency on storage media include Life Sciences and Digital Media. Both of these areas reflect rapid increases in their compound growth rates and in the potential size of their markets. Consequently, they reflect emerging requirements that will shape storage solutions. The new IBM models respond to these requirements, reflecting IBM's commitment to these growth areas.

Many uncertainties come inherently with opening new markets. Responding to these uncertainties requires flexibility and openness for supporting a new application solution. It also requires a variety of service and support options. IBM has demonstrated its commitment to these areas through its participation in industry standards groups and through the evolution of its IBM Global Services storage practices. **Enterprises choosing to invest in IBM enterprise storage solutions, either directly or through industry vendors, will find support organizations ready to cooperate as full partners in these explorations.**

Life Science Applications

Life Science applications focus on medical research and discovery, developing clinical procedures and controls, and providing a wide variety of medical imaging. Requirements for these applications include:

- Handling data in multiple files, any time, and anywhere.
- Needing data on-line and rapidly available.
- High levels of data replication and distribution
- Mandatory backup and retrieval without impacting the applications.

Models 800 efficiently respond to these requirements. Their 2 Gb communications

provides rapid data movement among multiple locations. Pharmaceutical research and development organizations can participate in on-line collaborative efforts. Remote diagnostic capability using high-resolution imaging expands options for healthcare.

The addition of a RAID 10² capability to ESS complements its earlier RAID 5, expands alternatives for storing data, and meets specific industry regulations that sometimes call for RAID 1. System utilization is made more efficient with this enhanced technology as multiple workloads can execute concurrently and in support of each other. Clinical diagnosis can now use on line imaging capability to improve doctor efficiencies. One objective of this market is to replace the large volumes of videotape used as historical archives.

Digital Media Applications

Digital Media, while sharing some of the requirements with Life Sciences, adds some unique requirements. It too requires fast, accurate search, retrieval, and manipulation of digital data. It will have a higher need for multi-site playback of data and images.

The Models 800 address these needs with high levels of data protection, system integrity, and high performance within the hardware architecture. The 2 Gb streaming capability again addresses very fast delivery of video material. The improved performance and throughput with double the sequential bandwidth enhance end-users' ability to create, manage, and transmit digital content, and to house very large capacities in single storage units.

IT Gains Efficiency

While these enhancements contribute to more efficient application use, they also contribute to increasing efficiency within the IT organization. These efficiencies are identifiable as consolidation benefits, improved manageability, and improved Total Cost of Ownership (TCO).

Efficiency Through Consolidation

Consolidation benefits derive from the

² RAID 10 uses the mirroring capability of RAID 1 while striping data across several disks in an array.

ability to place multiple heterogeneous workloads on the same storage device while improving business value. For the Models 800, scalability to 27.9 TB (physical capacity) provides room for housing new applications or for expanding existing applications. Models 800 support external NAS heads and iSCSI protocols as well as Fibre Channel, FICON, and iSCSI. Two Gb Fibre Channel and FICON connectivity options assure that these applications will have the bandwidth to make large data transfers more efficiently.

The ability to intermix RAID 10 with RAID 5 arrays is a new feature in Models 800. While RAID 5 remains generally the most efficient solution for data availability, there are applications that benefit from the ability to mirror data. Examples of these differences are seen in:

- Applications that are unable to use cache efficiently or that have very high random write operations experience up to 75% more throughput with RAID 10 than RAID 5.
- For applications with a high volume of read activity, RAID 5 provides improved performance over RAID 1 but is equivalent to RAID 10.
- For applications with a high volume of random writes, RAID 10 provides better performance.
- For applications with a high volume of sequential writes, RAID 5 provides better performance.

Providing both solutions enables these different applications to reside efficiently on the same device offering enhanced flexibility and optimum performance per workload.

Efficiency Via Improved Manageability

Manageability improvements are delivered through enhanced self-healing, self-optimizing, self-configuring, and self-protecting functions. These enhancements (referred to collectively as “autonomic” functions) increase storage administrator productivity and reduce the impact of industry skill shortages.

Benefits accrue through the system’s ability

to manage many functions dynamically, distributing workload to increase the proportion of time service levels are attained. Also, the system monitors components for potential failure and initiates recovery operations to assure business continuance; modifies configurations “on-the-fly” bringing new components on-line quickly; and protects data through a wide assortment of hardware enabled features that prevent one application from interfering with another.

The Models 800 exploit the most current disk drive technology, supporting both 10,000 RPM (18.2, 36.4, and 72.8 GB) drives and 15,000 RPM drives with 18.2 GB and 36.4 GB capacity. Additional management flexibility comes from the ability to intermix RAID 5 and 10 arrays within the same loop as well as to intermix 10K RPM drives and 15K RPM drives.

Simplified pricing structures add further efficiency to manageability. In response to customer concerns, IBM has revised its software and hardware pricing by adding more pricing tiers. This increases the pricing granularity based on physical capacity of the device, regardless of how it is configured or deployed.

Efficiency From Lowered TCO

Total Cost of Ownership benefits from each of the values described above. The Models 800 incorporate performance features that make them the best devices in the industry for running applications such as CRM, ERP, SCM, Life Sciences, and Data Warehousing that have demanding performance, availability, backup and disaster recovery requirements.

The value contributed by technology improvements is seen in total system random throughput, increased by 80%; random reads support up to 28% more operations, random writes support up to 63% more operations, and sequential workloads get 10% more bandwidth.

The bottom line on IBM’s new models:

- **They deliver performance, scalability, functions and availability for today’s most demanding applications while holding even more in reserve.**
- **They deliver the industry’s most efficient storage solution, driven by the capacity improvements that**

reduce storage costs; the software and hardware enhancements that enhance throughput; the channel extenders that enable data movement over extended distances; the extensive choice of protocol; the new advanced features' pricing, and IBM's industry-leading warranty and service.

Conclusion

In today's business environment, being flexible is viewed universally as a value. But if the flexibility comes at the expense of added complexity, value becomes less clear. Isolating applications to servers and directly attaching storage is one way to protect flexibility. History shows that the costs associated with this are difficult to justify.

An appropriate goal for today's larger enterprise is the selection of robust computing infrastructures that transform system complexity into end-user efficiency. IBM positions its new ESS Models 800 to achieve this goal for enterprises that choose to consolidate their data. **By placing application needs first and also addressing IT needs, the Models 800 and 800Turbo offer cost efficiencies that justify careful consideration, especially in today's highly stressed economy.**



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