

Outstanding virtualization capabilities help to optimize and protect IT investments



## IBM Virtualization Engine TS7700



### The Challenge:

In order to maintain continuous business operations, address regulatory requirements and archive business records, you need an infrastructure that allows you to manage your data from online application storage to offline, permanent archive media. Tape backup is a key part of this life cycle, allowing you to safely store long term archives for record keeping and disaster recovery. But as data centers and data stores grow, tape backup operations become more complex. This growth can lead to increased backup and restore times, high management overhead and skyrocketing costs.

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### Highlights

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- *Can help accelerate backups and recalls by leveraging a tiered hierarchy of disk and tape to more efficiently use tape drives*
- *Can help reduce costs such as power, maintenance, operations and support staff*
- *Can help automate and simplify IT operations using advanced policy management*
- *Supports business continuity by supporting GRID connectivity and automated replication*
- *Supports data encryption and key management*

### The Solution: The IBM Virtualization Engine TS7700

The IBM Virtualization Engine™ TS7700 (TS7700 Virtualization Engine) is a mainframe virtual-tape solution that is designed to optimize tape processing. Through the implementation of a fully integrated tiered storage hierarchy of disk and tape, the benefits of both

technologies can be leveraged to help enhance performance and provide the capacity needed for today's tape processing requirements. Deploying this innovative subsystem may help reduce batch processing time, total cost of ownership and management overhead.

The TS7700 Virtualization Engine has been designed to reduce or eliminate a number of bottlenecks that may be present in any given tape environment. Any reduction in bottlenecks will vary depending on the characteristics of installed equipment and workload, but reducing bottlenecks can help reduce batch processing time.

For example, if the batch process is constrained, the TS7700 Virtualization Engine's processing power, cache capacity and support for 4 Gbps IBM FICON® attachment may help alleviate bottlenecks and reduce the batch window.

The TS7700 Virtualization Engine supports attachment to and exploits the performance and capacity of the IBM System Storage™ TS1120 Tape Drive or the IBM TotalStorage® 3592 Model J1A Tape Drive installed in an IBM System Storage TS3500 Tape Library or IBM TotalStorage 3494

Tape Library. Support for these tape drives may help to reduce the number of cartridges and the size of the library by allowing the storage of up to 2100 GB on a single 3592 JB cartridge, assuming 3:1 compression.

#### **Build a responsive and flexible solution with Advanced Policy Management**

Virtual drives can be dedicated to a specific server or shared across LPARs in supported mainframe environments. This flexibility helps to maximize the efficiency of data transfer operations by allowing allocation of sufficient drives to address specific workload requirements.

While a TS7700 Virtualization Engine provides storage management capabilities that support autonomic management of data, advanced functions are available that can be implemented by IBM DFSMS™ policy management to help optimize data storage.

These advanced functions include:

- *Cache management, which influences the retention of virtual volumes in cache*

- *Volume Pooling, which groups logical volumes on sets of physical volumes*
- *Selective Logical Volume Copy, which creates a copy on a different cartridge*
- *Replication method, which controls how logical volumes are copied in a TS7700 GRID configuration*
- *Logical volume size, which enables volume sizes of 1, 2 or 4 GB*
- *Copy export, which enables volumes to be removed for disaster recovery.*

#### **Support for mainframe environments**

The TS7700 Virtualization Engine may be attached to supported IBM System z™ servers using 4 Gbps FICON at distances of up to 100 km using channel directors or switches, up to 250 km using DWDM, or extended distances using supported channel extension products.

#### **Protect your business with TS7700 GRID Business Continuity solutions**

A GRID communication feature allows interconnection of up to three TS7700 Virtualization Engines to form a GRID configuration. The TS7700 supports this environment by providing comparable function to the IBM TotalStorage Metro/Global Mirror. Since each of the

TS7700 models can reside in different locations, these configurations are designed to help keep data available even if one of the sites experiences an outage. This helps maintain availability during planned maintenance, service or system upgrades, and it avoids the transportation of cartridges in the event of a disaster.

The TS7700 includes multiple modes of synchronous and asynchronous replication. This can be assigned to volumes via DFSMS policy, providing flexibility in implementing business continuity solutions.

#### **Simplify management with Web-based management interface**

A Web-based GUI is provided to configure and monitor the TS7700 Virtualization Engine. The GUI is used in conjunction with the TS3500 library and the IBM 3953 Library Manager Model L05 to access information such as the current system status and resource usage statistics.

A separate tool, the IBM TS3000 System Console (TSSC), is required to allow IBM service personnel to perform maintenance. If authorized/enabled by the customer, the tool can remotely monitor the installation and automatically dispatch a service representative if needed.

#### **Support for Data Encryption**

To help keep information confidential if backup tapes are lost or stolen, the TS7700 Virtualization Engine supports TS1120 tape drive-based encryption. The TS1120 tape drive includes data encryption capabilities within the drive itself, helping to avoid the need for host-based encryption of data—and the concurrent drain on host performance and resources—or the additional expense of specialized encryption appliances.

The IBM Encryption Key Manager component for the Java™ platform can help generate and manage encryption keys for TS1120 tape drives across the enterprise. This feature uses standard

key repositories and supports three different encryption key management methods: application managed, system managed or library managed. Only system managed encryption is supported on the TS7700 Virtualization Engine.

#### **Implementation services**

In addition to the Installation Guides and Redbooks that are available for customers to use when installing this solution, IBM also provides a set of service offerings designed to expedite implementation.

For further details, please visit [ibm.com/storage](http://ibm.com/storage)

#### **Competitive financing options**

IBM Global Financing offers some of the industry's most competitive rates for a wide range of IBM products and services for the duration of the financing term.

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## TS7740 Virtualization Engine at a glance

Specifications	Single Node	2 Cluster GRID	3 Cluster GRID
Native tape volume cache (TB)	Up to 6	Up to 12	Up to 18
Virtual drives	256	512	768
TS1100 or 3592 tape drives	4 to 16	8 to 32	12 to 48
Virtual volumes	1,000,000	1,000,000	1,000,000
FICON channels	4	8	12
Warranty	1 year on site repair		

### Physical specifications

Width:	644 mm (25.4 in)
Depth:	1102 mm (43.4 in)
Height:	1804 mm (71.0 in)
Weight:	565.6 kg (1247 lb)

<b>Supported environments<sup>1</sup></b>	IBM z/OS® v1.6 or higher
	IBM z/VM® v5.1 or higher
	IBM z/VSE™ V3.1.2 or higher
	IBM z/TPF™ 1.1 or higher
	IBM TPF 4.1 or higher

### For more information

Contact your IBM representative or IBM Business Partner or visit:

- [ibm.com/servers/storage/virtualization](http://ibm.com/servers/storage/virtualization)
- [ibm.com/servers/storage/tape](http://ibm.com/servers/storage/tape)

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<sup>1</sup> Lists the minimum software level requirements for basic support. Please refer to the technical documentation for specific function or feature support.



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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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