



Sehr geehrte Kunden,

wir möchten Sie informieren, dass IBM am

10. Mai 2016

das Virtuelle Tape System TS7760 angekündigt hat.

Im Überblick

Die TS7760 zum Anschluss an zSysteme ist das Nachfolgesystem der TS7720 und der TS7740 basierend auf Power8 Prozessortechnologie.

Die TS7760 wird mit oder ohne Tape-Anschluss mit der Release R4 (TS7760, TS7760T) im 19" Rack mit einer nutzbaren Cache-Kapazität von bis zu 1,3 PB vor Compression und einem erheblich höherem Durchsatz gegenüber den Vorgängersystemen geliefert.

An die TS7760T werden sowohl die bisherige TS3500 (bestimmte Erweiterungen notwendig) als auch die neue TS4500 Tape Library angeschlossen.

Die TS7760 unterstützt die Funktionen der TS7720 und TS7740 mit den Erweiterungen

- DDP Dynamic Disk Pooling (dyn. RAID Funktion)
- Maximales Repository von 1,3 PB vor Compression
- Unterstützung der TS4500

Die näheren Informationen finden Sie auf den anliegenden Folien vor.

Für Fragen stehen wir Ihnen zur Verfügung.

Mit freundlichen Grüßen



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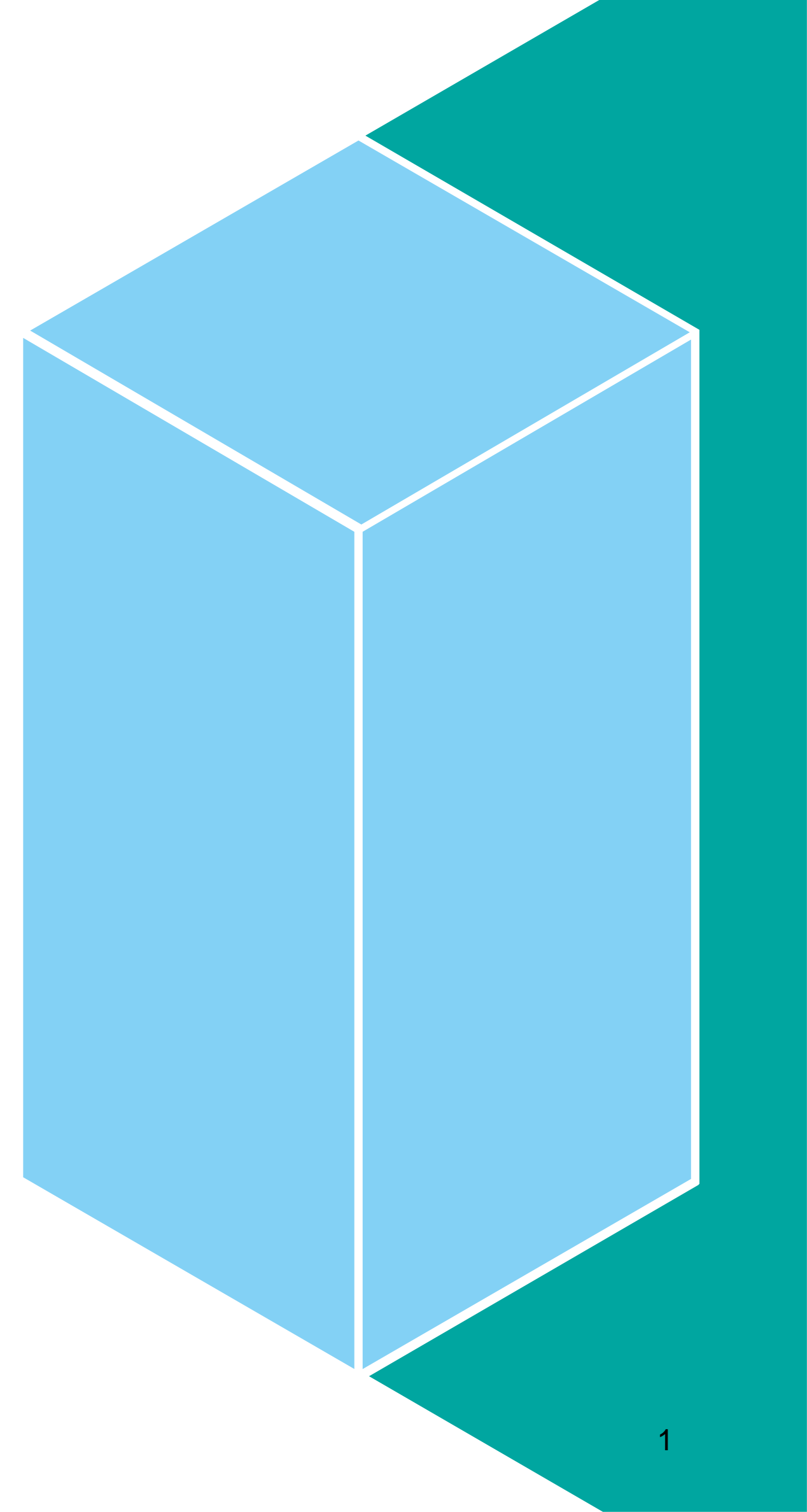


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IBM TS7700 - R4 (TS7760(T))

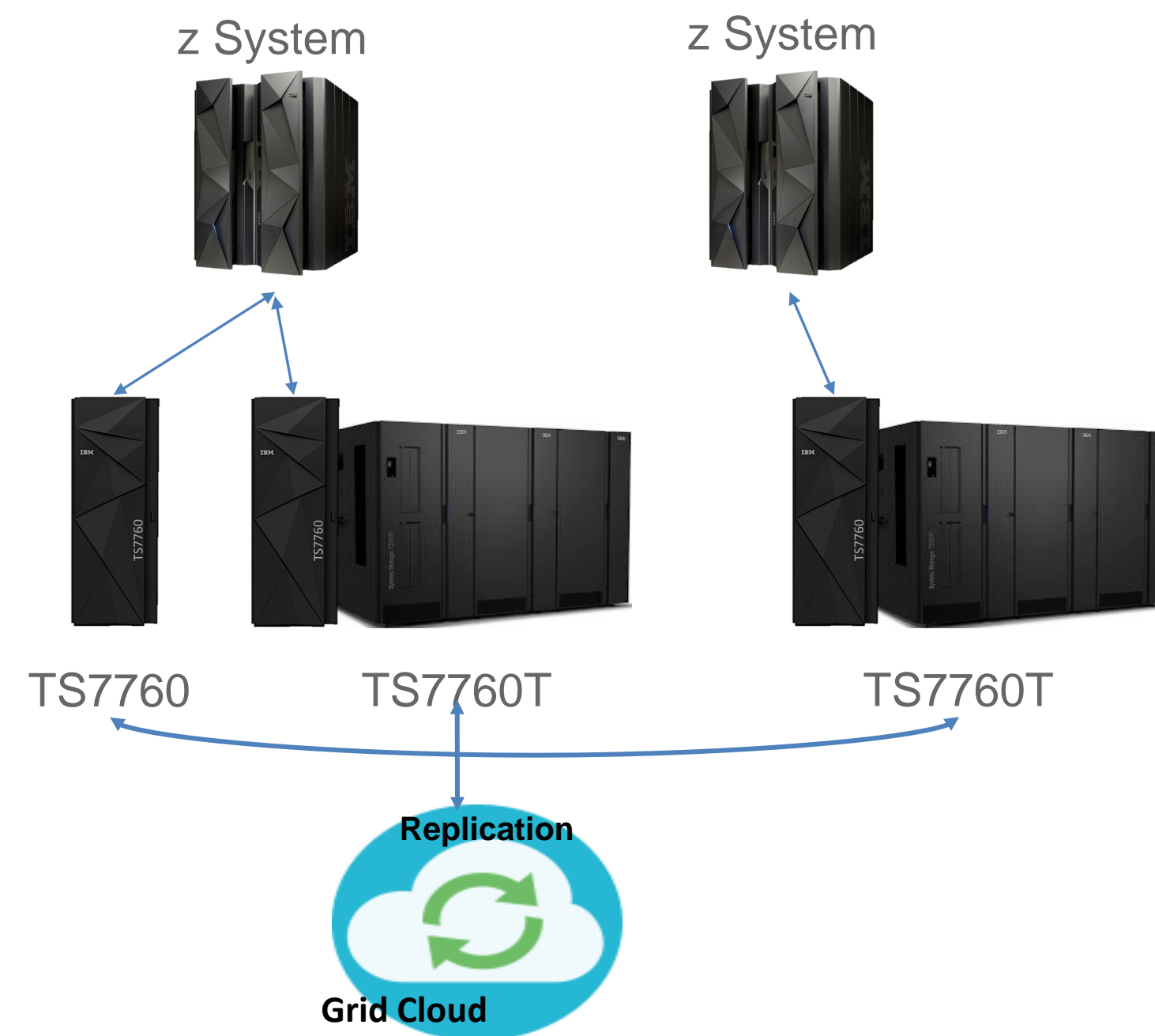




IBM TS7700, Built for z System

■ z/OS Synergy

- No additional z/OS software required to support TS7700
- Full access to all IBM propriety tape library command sets
- Host sees entire TS7700 Grid versus a series of independent MTLs
- DFSMS OAM Management of TS7700 clusters
- TMS Integration, including house keeping
- Device/Scratch Allocation Assist
- 4096 shared devices per composite library
- Numerous present and future exclusive functions
- Full DFSMS volume granular policy management
- Replication, LWORM, Allocations, Physical Tape Usage and many other features.
- z System intelligent
- Allowing efficiencies such as impressive zero RPO synchronous copy.
- User commands (i.e. LI REQ) and tools support.
- Can partition with zVM, zVSE, zTPF
- End to end FICON CRC protection



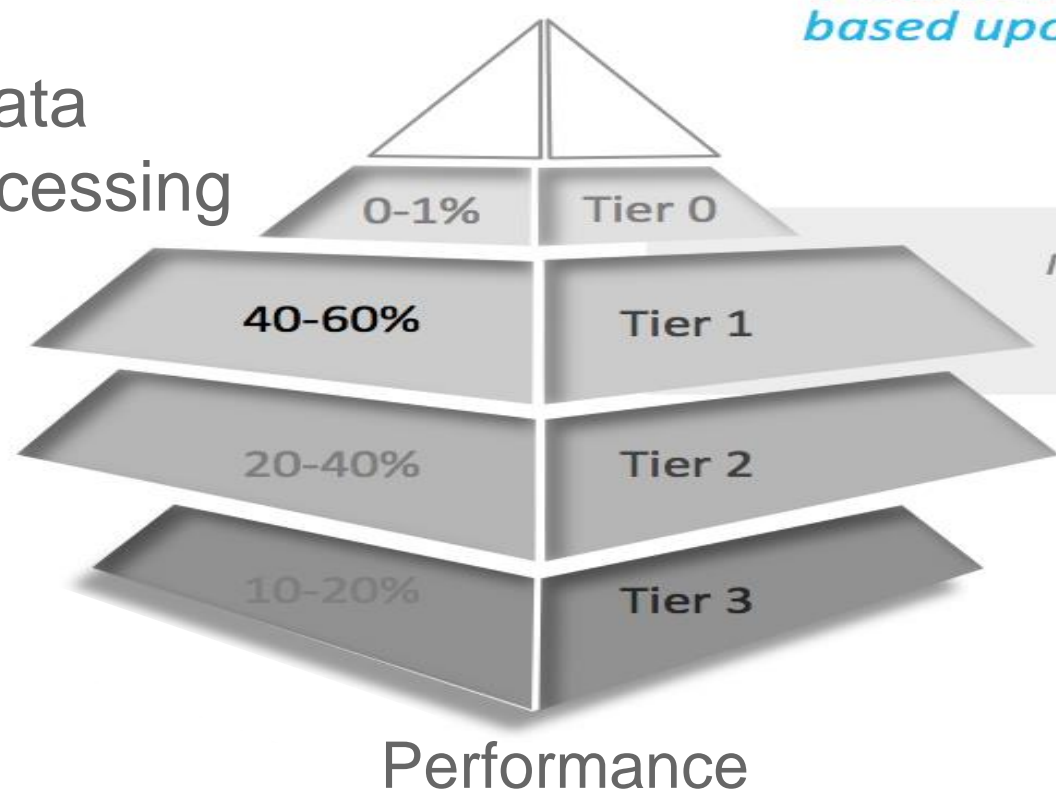


Performance, Long Term Retention, or Hybrid

- **Not “one size fits all”**
 - Performance based solutions are optimal for primary data applications or applications which need fast access times
 - Solutions tightly integrated with physical tape are best for archive and backup data
 - Total cost of ownership also factors into a customer’s choice which doesn’t always agree with usage case
- **TS7760 Tape Attach and Hybrid Grid is the best of both worlds**
 - Using TS7760T disk cache partitioning, users can direct specific workloads by policy to physical tape
 - Using Grid architecture, intermix TS7760 solutions with disk/tape TS7760T solutions
 - Allows customer to configure how their data is managed in order to fully benefit from physical tape
 - Allows IBM to be flexible in its offerings while also differentiating itself with smarter options

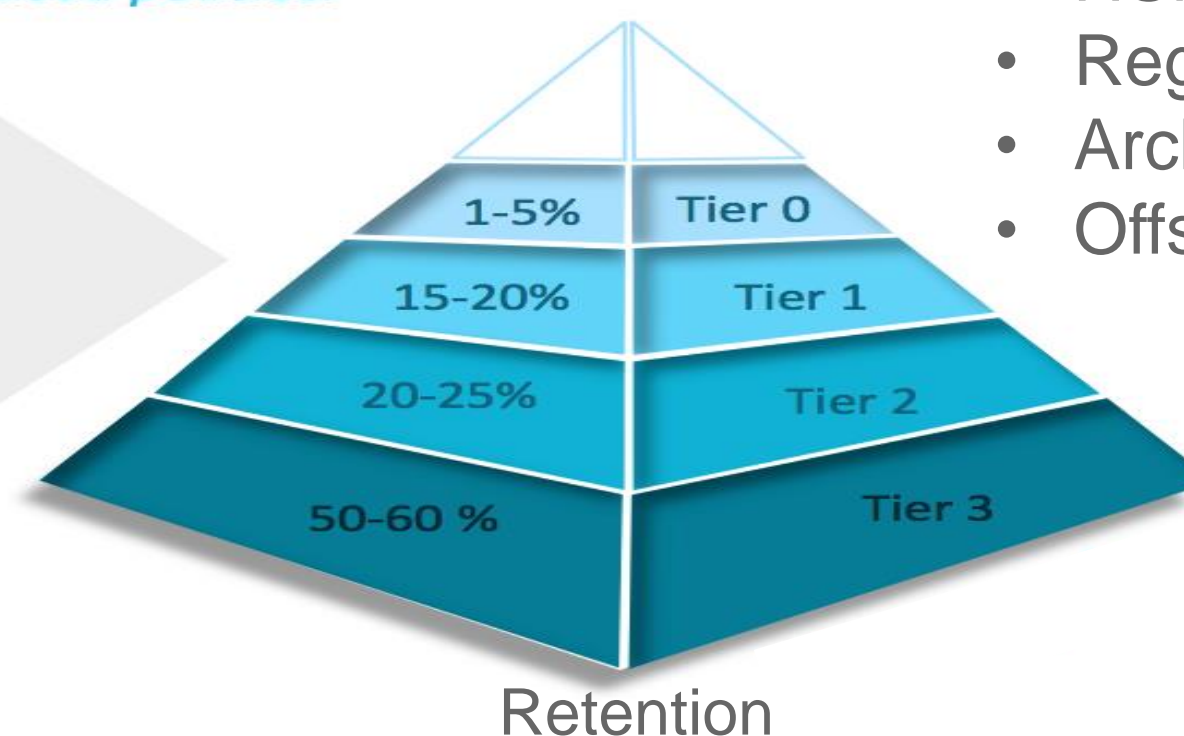


- HSM ML2
- Primary Data
- Image processing



Automated placement and re-tiering of client data based upon analysis-informed standardised policies.

Intelligent capacity planning to procure data storage capacity aligned to business needs and actual demand

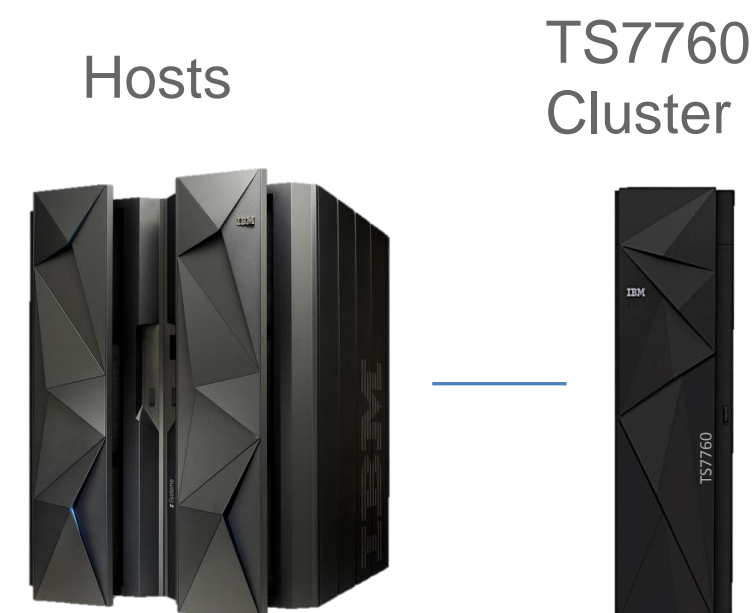


- HSM Backup
- Regulatory Retention
- Archive data
- Offsite Physical Copies



IBM TS7760 Solution(s)

- Agile Deployment
 - Access-centric applications (image data, report servers, critical backups, HSM ML2)
 - Cost-efficient applications (HSM, general backups, master-in, master-out, GDGs, archive)
- 100 to 2.500 MB/sec on demand performance
- Up to **1.3 PB** disk cache per system.
 - **3.9 PB with 3:1 compression**
- **Up to 100PB** Tape attach support
 - **300 PB with 3:1 compression**
 - TS1150, TS1140, TS1130 Tape drives
 - TS4500 and TS3500 Automation
- Data protected at all levels
 - No performance impact
 - AES 256Bit Strong Encryption
- Dynamic Disk Pools
- 6-Way Grid Cloud replication



And / Or



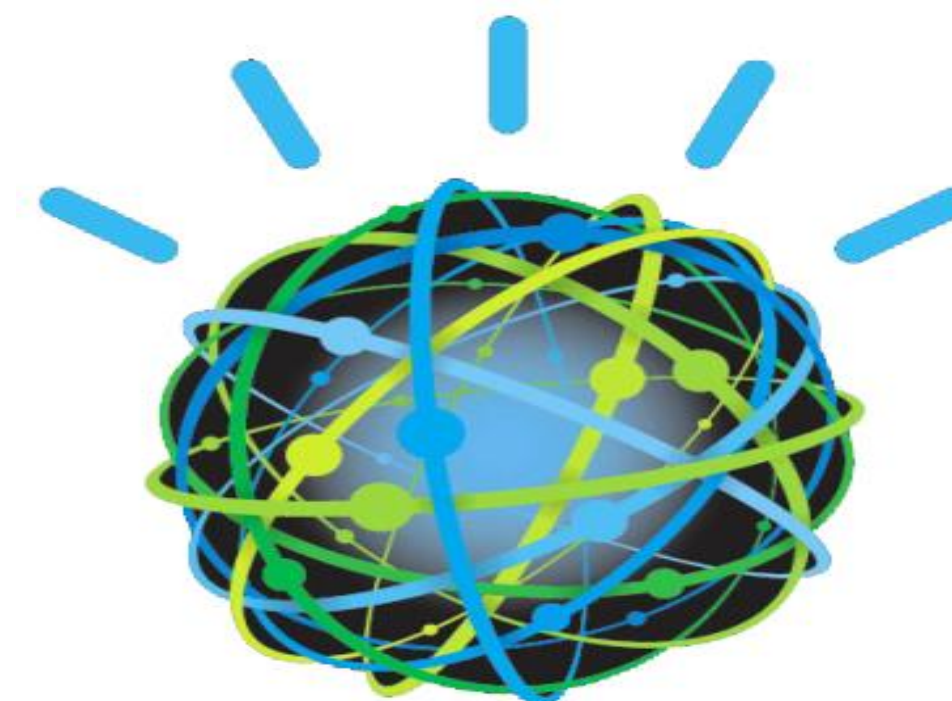
Key available features

TS7760 Deeper dive



Leveraging IBM Technology

- **System p server with IBM Power8**
 - Two 10-way processor card
 - Over 2 GBps of data throughput
- **Dynamic Disk Pools**
 - High performance AES 256 bit encryption disks
- **AIX**
 - Reliable, robust, tools suites and support
- **Spectrum Scale (GPFS)**
 - High performance, high capacity, highly scalable
- **DB/2**
 - Highly scalable, highly available database
- **WebSphere Message Queues**
 - Highly available messaging architecture
- **FICON host adapters**
 - Common adapter hardware to the DS8K family
- **Host Perform Library Function (PLF) zSeries Commands Interface**
 - True synergy with z/OS without any dependency on MTL support
- **IBM Tape and Automation Technology**
 - 3592/TS1150 → 10TB on a tape
 - TS4500 modular, scalable, highly available automation





TS7760: Next Generation Controller

- **Built with DS8880 Synergy**
Common 19" Rack, pSeries hardware, I/O bays and adapters
- **Standard 19" Form Factor**
Complies with data center planning requirements
- **Built on new Power8 platform**
Two 10 core, 3.42GHz processors
- **New I/O Bay interconnect**
PCIe Gen3 for increased bandwidth performance and HW support
- **Integrated Power System**
Single phase power
- **Exclusive features**
4X10Gb long wave Ethernet network links for Grid Cloud replication
16Gb FC attachment to disk cache and TS1100 tape drives





TS7760: 3856-CSA/XSA Disk Cache

- **Larger Capacity**
 - 4TB 7.2K SAS Drives
 - 31.4TB per drawer
- **Improved performance**
 - 16Gb FC connectivity
 - Higher performance achieved with fewer disk drawers
- **Dynamic Disk Pools**
 - No dedicated spares required
 - Reserved capacity (e.g. 20%) set aside for disk drive rebuilds
 - Rebuild times reduced by up to 80%
- **Full AES256 Encryption**
 - Internal and External (SKLM) Key Management
 - No impact to performance
 - Retroactive enablement
- **Improved Support**
 - Concurrent code update, including disk drive firmware



IBM Synergy: Leveraging DS3500



TS7760 with TS4500 Attachment

- Next Generation Enterprise Automation

Dual-Accessor for High Availability

Integrated Service Bay

Dynamic Partitioning

Transparent Capacity on demand

Virtual I/O (VIO)

Up to 128 - TS1150 / TS1140

Single Cartridge support up to 10 TB native

16Gb FC Switch support for TS7760T attach

100 PB native usable capacity when attached to TS7760T

- Improved performance

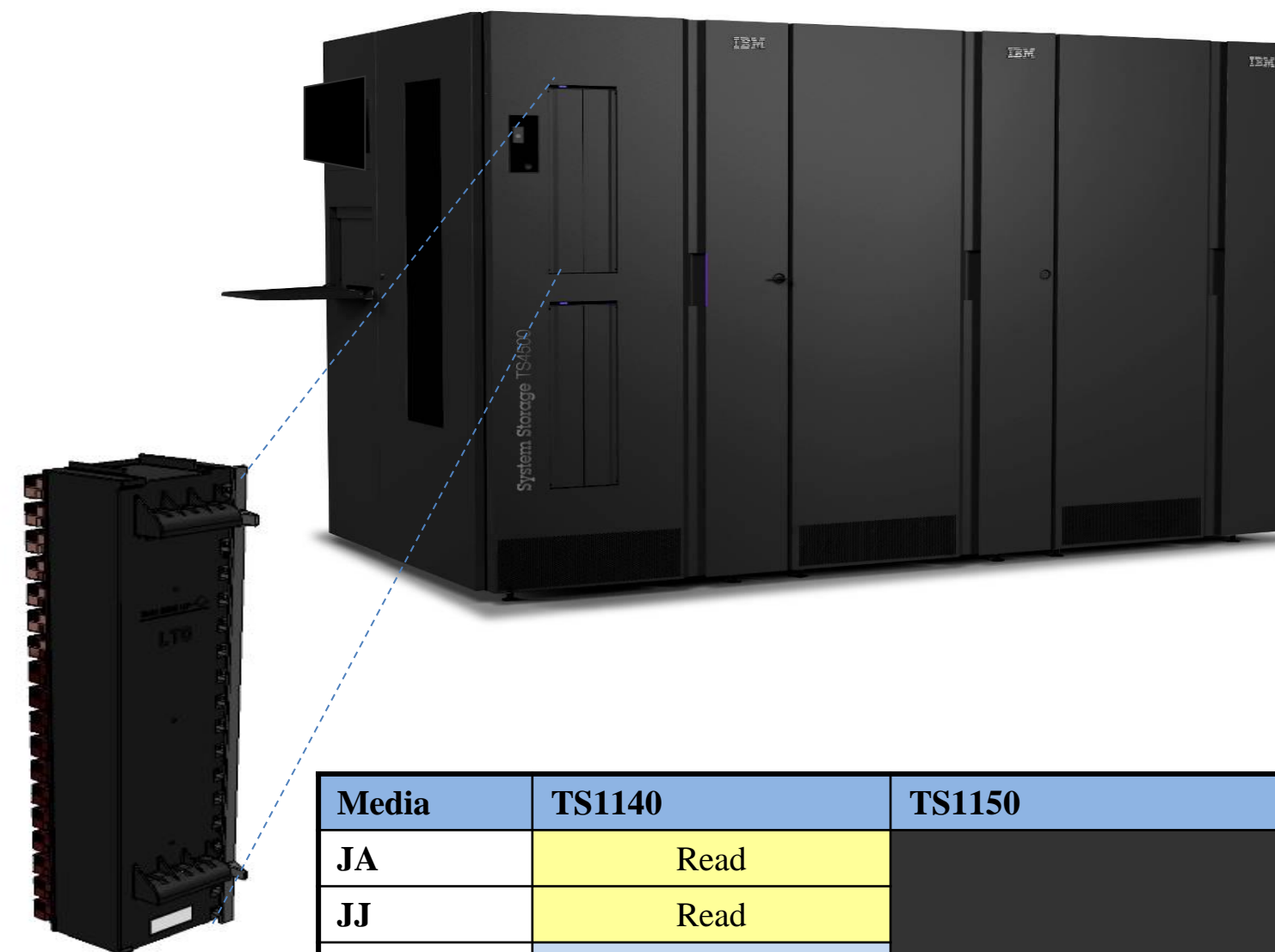
1Up to 2.7x the slot density over TS3500 for TS1100

- Improved Management

Magazine I/O

Native LDAP support

Improved ease of use



Media	TS1140	TS1150
JA	Read	
JJ	Read	
JB	Read-E05 1.0TB-E06* 1.6TB-E07	
JC	4TB	4TB-E07* 7TB-E08
JK	500GB	500GB-E07* 900GB-E08
JD		10TB
JL		2TB



Model TS7760 Components (slide 1 of 3)

- **The frame**

- Up to 36u of rack space dedicated to TS7760 components

- A TS7760 VEC controller

- One TS7760 cache controller

- Up to nine TS7760 cache drawers

- Redundant power supplies for improved availability

- Two power feeds for improved availability

- **The “Cluster”**

- High performance IBM Power[®] 8 server

- Two 10-way processor card

- Up to 3.6 GBps of data throughput

- Redundant I/O drawers for improved availability

- Performance enablement features

- Up to 24 additional 100MBps increments (FC5268)

- First increment is enabled with the server (FC9268)

- Hardware for continuous availability

- 2x1Gb, 4x1Gb (SW optical or Copper) or 2 or 4x10Gb LW Optical Grid Ports

- Up to 6-way grid configurations



¹ Machine Type 3957 Model VEC



Model TS7760 Components (slide 2 of 3)

- **Base frame supports up to 9 additional XSA cache drawers¹**

Provide high performance Dynamic Disk arrays

Maximum base frame capacity 314TB (pre-compression)

- **Up to two optional expansion frames**

Each with CSA disk controller and up to 15 model XSA disk expansion modules

Maximum capacity of each TS7760 Encryption Capable Expansion frame is 502 TB

- **Each TS7760 cache drawer**

High performance Dynamic Disk Pool

- Attaches to the TS7760 cache controller

- Provides ~ 31TB of usable cache capacity

- Includes 4TB SAS HDDs

Supports high availability

- Dual power

- Automatic rebuild leveraging reserved capacity

- Redundant hot-swap components

AES 256 bit encryption



¹ Machine Type 3956 Model XSA



Model TS7760 Components (slide 3 of 3)

- **TS7760T**

Physical Tape Support

16Gb Fibre Channel connectivity

Minimum of 4 and a Maximum of 16 Tape drives

- **Flexible Cache configuration**

- Balance performance and cost

- **Each TS7760T**

Supports

TS1150, TS1140, TS1130 Tape drives

TS4500* and TS3500 Tape Libraries

Supports high availability

Dual power

Automatic hot sparing/rebuild

Redundant hot-swap components

Dual Tape Automation Accessors

AES 256 bit encryption



¹ Machine Type 3956 Model XSA

*Limited to supported TS1140 and TS1150 tape drives



TS7760 value based enhancements

- Up to 60% VTL Cache Throughput
 - Reduced drawer count for the same performance (see upcoming Performance WP for details)
- Up to 27% faster replication
 - Near 0 downtime
- 2X higher Redundancy in grid connectivity
- Up to 2X higher bandwidth to Physical tape
 - Reduce data retrieval times
- 30% Higher Disk capacity
 - Reduce infrastructure costs by up to 20%*
- Up to 68% faster Rebuild times
 - Reduced impact to performance
- Reduce update times by up to 80%
 - Concurrent Disk Firmware updates eliminate impacts to operations

* Based on maximum configuration support of 1.3PB in TS7760. Reduce Floor Space by 3 Frames and 20 Drawers over TS7720. (reduction of foot print by 27 sqft, 44% power saving)



Summary of key specifications

Specifications per cluster	TS7760	TS7760T
Number of Virtual Devices	496	496
Usable Cache	Up to 1,3 PB	Up to 1,3 PB
Compressed Cache Capacity (3:1)	Up to 3,9 PB	Up to 3,9 PB
Total Usable Capacity	Up to 1,3 PB	Up to 100 PB
Total Compressed Capacity (3:1)	Up to 3,9 PB	Up to 300 PB
Number of Virtual Volumes (max)	4.000,000	4.000,000
TS1150/1140/1130 Tape Drives	---	4 - 16
FICON channels (8Gb)	2, 4 or 8	2, 4 or 8
Logical paths per FICON channel	512	512



TS7700 Highlights

- **DFSMS policy managed**

No dependency on Tape Management System volume pools or MTLs

Provides volume granular control of virtualization and TS700 functions

Improved synergy with z/OS, such as Scratch Allocation Assist

- **Ease of use and security**

Web and z/OS console managed

LDAP and SNMP Alert Support

AES256 Disk and TS1100 Encryption

Selective Device Access Control – Protected Partitioning for Multi-Tenancy

Logical WORM - Just like physical worm, but in a logical environment

- **Recovery and continuance made easy**

Simply vary on devices and go! No concept of primary/secondary nodes.

Consistency awareness – No ambiguity as to what is valid where.

Disaster recovery testing while production continues.

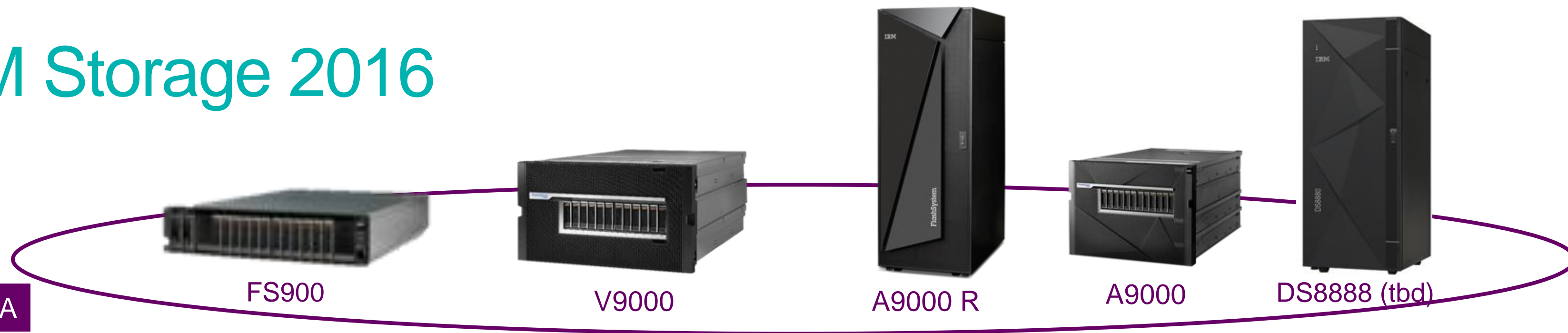
Optional physical export for data center move or lower cost DR needs

Expand and reduce grids for simple data center moves and migrations

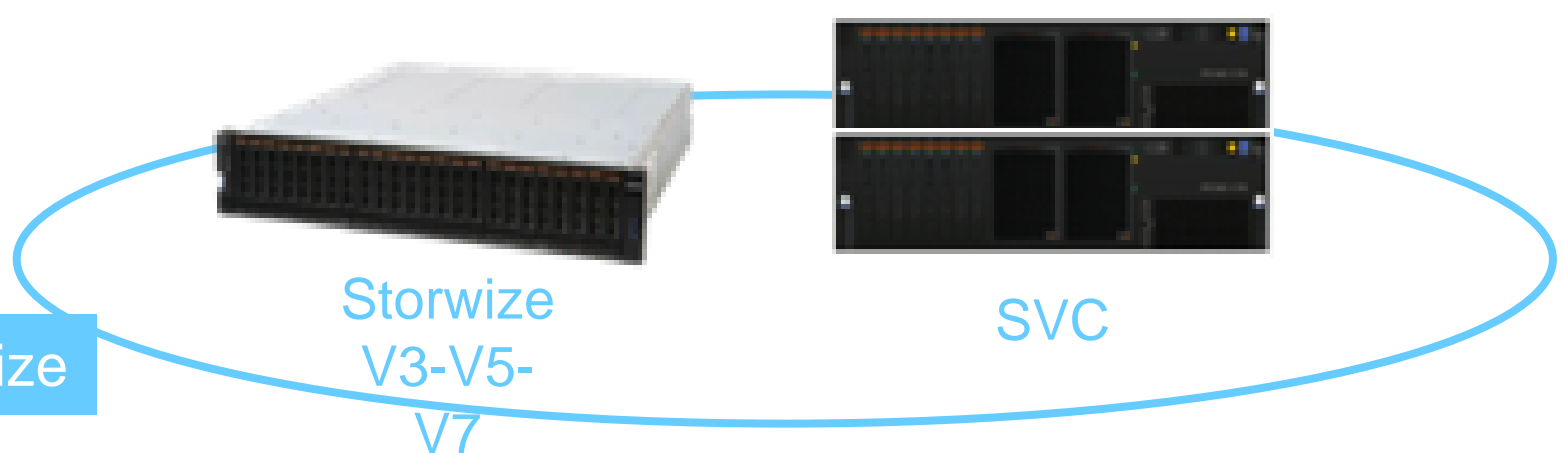


IBM Storage 2016

AFA



Storwize



High End



DPR



Spectrum SDS

