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MVSS Project Opening Keynote

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Monday, February 28, 2011
Session 8956

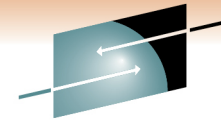


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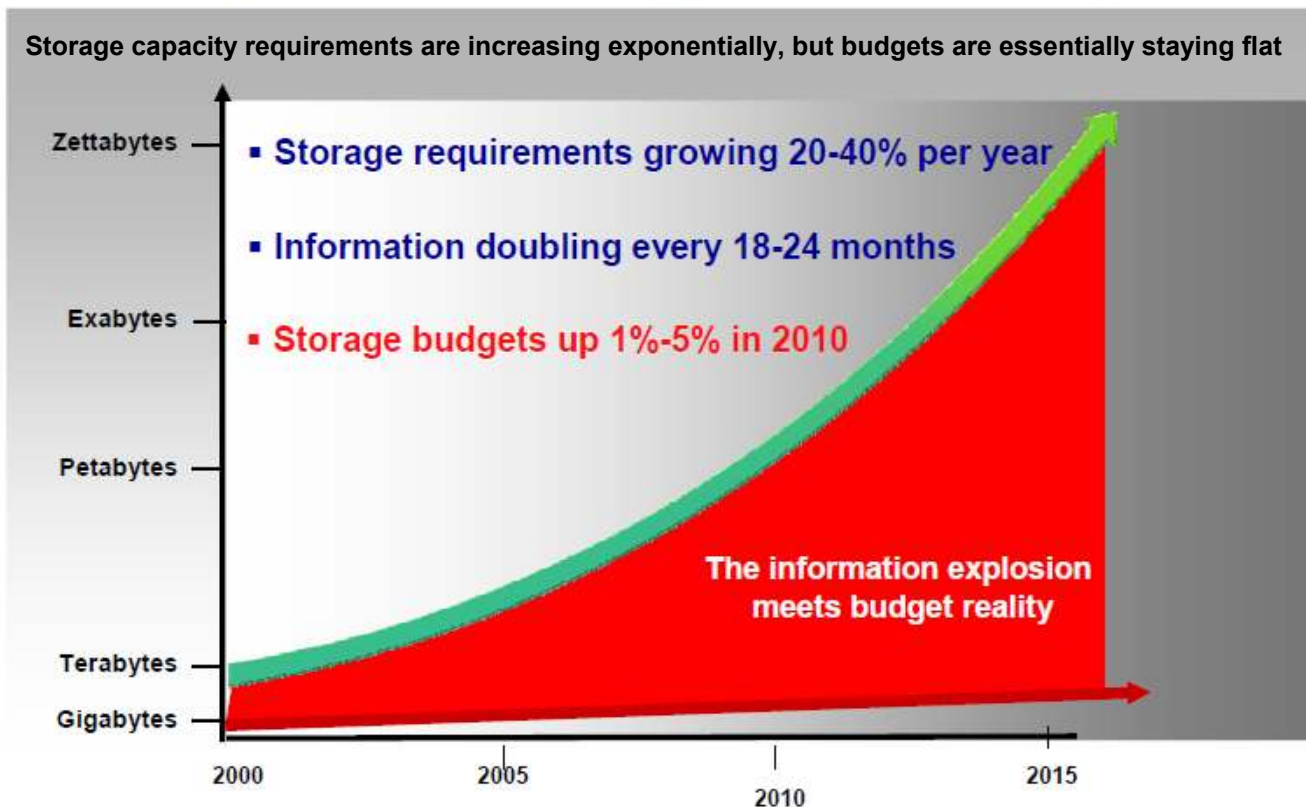
Smarter Planet:

The progress is inspiring



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Smarter Systems are Creating an Information Explosion



- Approximately two billion people on the Web, billions of mobile phones, millions of radio frequency identification and global positioning system (GPS) tags, and a trillion other objects, all interacting and **generating approximately 15 petabytes of information every single day.**
- As the world becomes more interconnected, instrument and intelligent, the amount of information we're creating is becoming increasingly difficult to deal with.

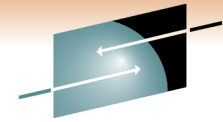
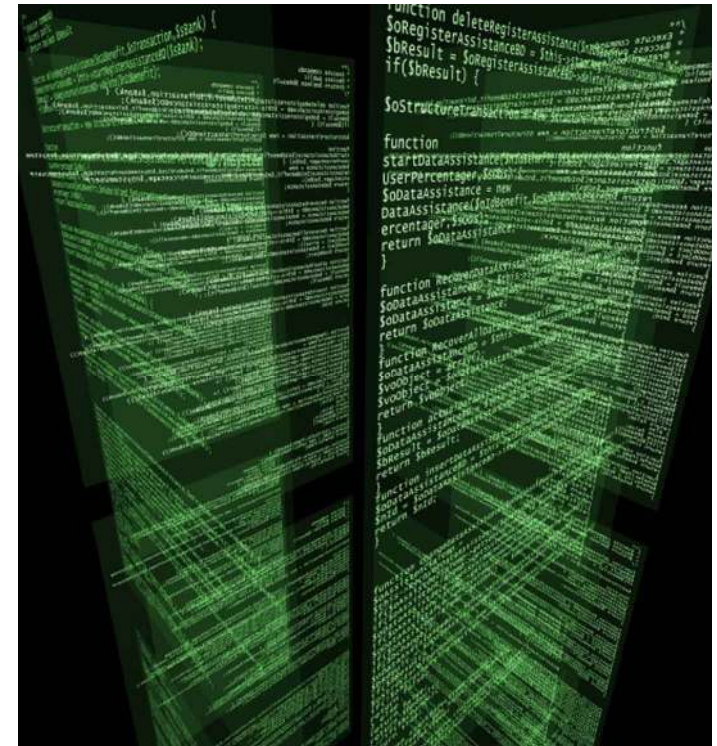
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The Reality Can Seem Daunting

While technology has made great strides and all platforms are more capable than ever before...

... the challenges set upon them have never been greater

- 66% or more of IT operating budgets are spent on ongoing operations and maintenance, instead of new IT initiatives and projects.
- 41% of data center managers claim their data centers will max out their energy capacity within one to two years.
- Enterprise data growth over the next five years is estimated at 650%. Much of it will be unstructured data, pulled from a variety of sources. And 70% of this unstructured data will become stale after 90 days.
- Two-thirds of large U.S. companies believe they need to improve their analytical capabilities. Across the companies surveyed, only 60% of major decisions are based on analytics, while 40% are based on intuition.



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The information explosion: It can either bury us—or make us smarter

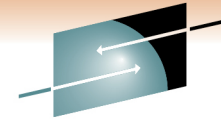
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Where Do We Go From Here?

- We need smarter Systems and Software for enterprise computing and robust cloud environments that
 - **Unify and optimize** multiple systems to work as a single, **integrated** service delivery platform
 - **Scale** without adding complexity to meet the growing demands on the infrastructure
 - **Simplify** data center management
- In order to enable IT to act as a platform for business innovation, leadership and competitive advantage

IBM's Strategy: The zEnterprise System

Integrated, Optimized, Scalable, Simplified



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IBM zEnterprise 196 (z196)

- **Optimized** to host **large-scale** database, transaction, and mission-critical applications
- The most efficient platform for **large-scale** Linux consolidation
- Capable of **massive scale-up**
- New **easy-to-use** z/OS V1.12 and V1.13

zEnterprise Unified Resource Manager

- **Unifies** management of resources, extending IBM System z qualities of service end-to-end across workloads
- Provides platform, hardware and workload management

zEnterprise BladeCenter Extension (zBX)

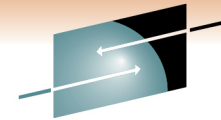
- Selected IBM POWER7® blades and IBM System x Blades* for tens of thousands of AIX and Linux applications
- High-performance **optimizers** and appliances to accelerate time to insight and reduce cost
- Dedicated high-performance private network

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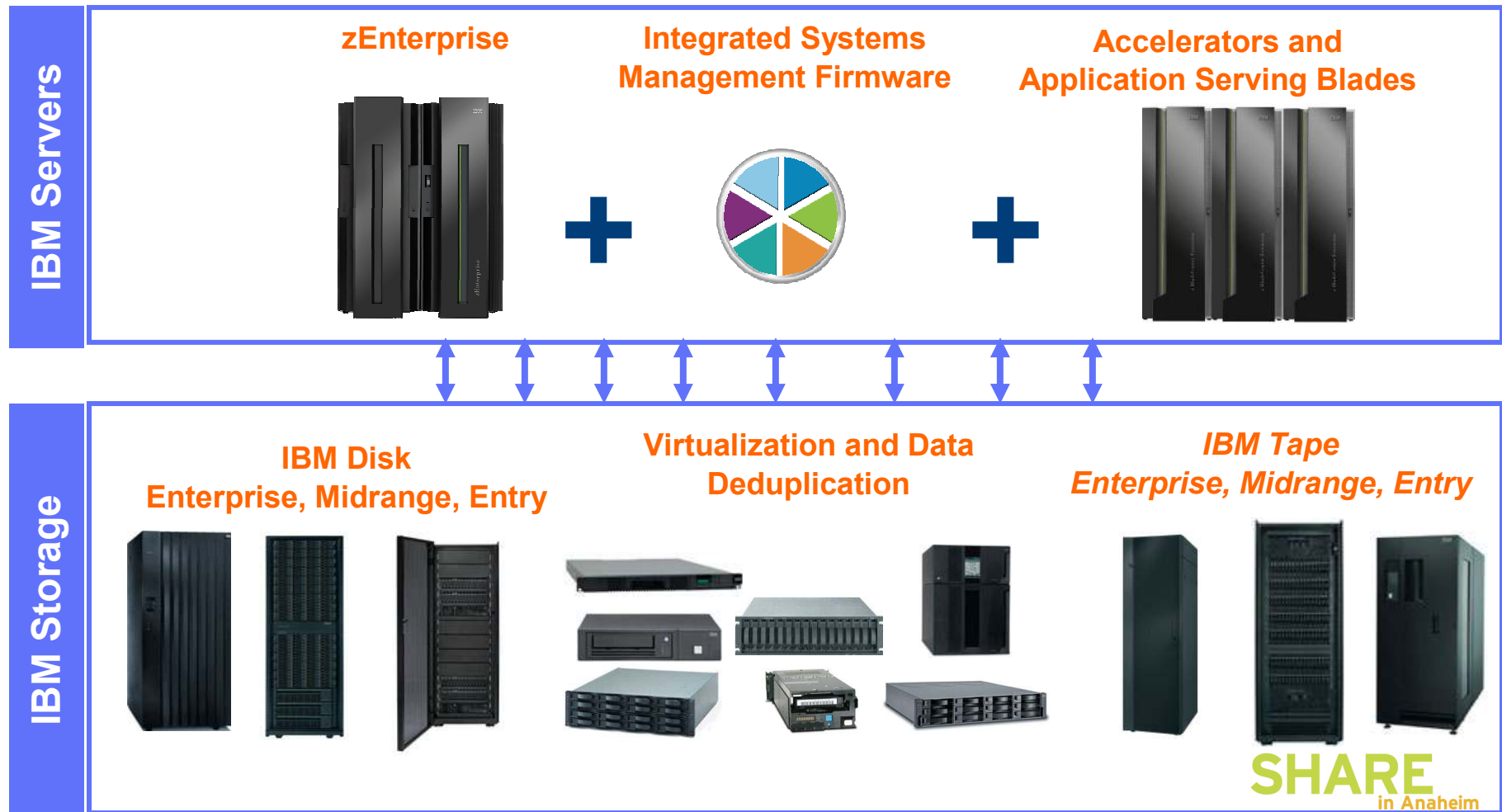
IBM Storage Portfolio + zEnterprise Strategy

Collaborating to support the growth and protection of mission critical information

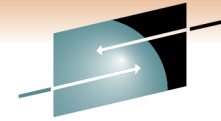


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- Leadership in transaction processing performance
- Leadership in business continuity
- Leadership in backup and archiving
- Leadership in data deduplication
- Leadership in security



DS8700 is Optimized for the zEnterprise™ System



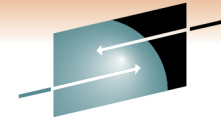
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- **DS8700 is optimized for consolidating mixed workloads**
 - **Easy Tier** feature for smart data placement with SSDs
 - **z/OS Distributed Data Backup** can consolidate multiplatform data backup/restore
 - Innovative caching algorithms provide efficient use of cache memory (Intelligent Write Caching, Sequential Adaptive Replacement Cache, Adaptive Multi-stream Pre-fetch)
 - Comprehensive set of I/O measurements reported via RMF™ for management of mixed workloads
 - **DS8700 is optimized for zEnterprise “plug and play”**
 - DS8700 supports **System z Discovery and Auto-Configuration (zDAC)**
 - Automatic discovery of new and changed storage devices
 - I/O measurements allow Dynamic CHPID Management to make optimal configuration decisions
 - Self-describing capability can help identify single points of failure
 - **DS8700 and zHPF: optimized for scale, performance and resilience**
 - **Full zHPF Multi-track support** for transfer sizes of over 2 MB
 - DB2 Table Scans and Utilities now convertible to zHPF
 - Reduces query times and elapsed times for utilities
 - Complements **Extended Addressability Volumes (EAV)** with performance and scalability
 - Enhances system resilience by better being able to handle workload spikes
- **For more on why server + storage synergy matters see**
- **Session 8958: System z and Storage Synergy, Wednesday at 11 AM**



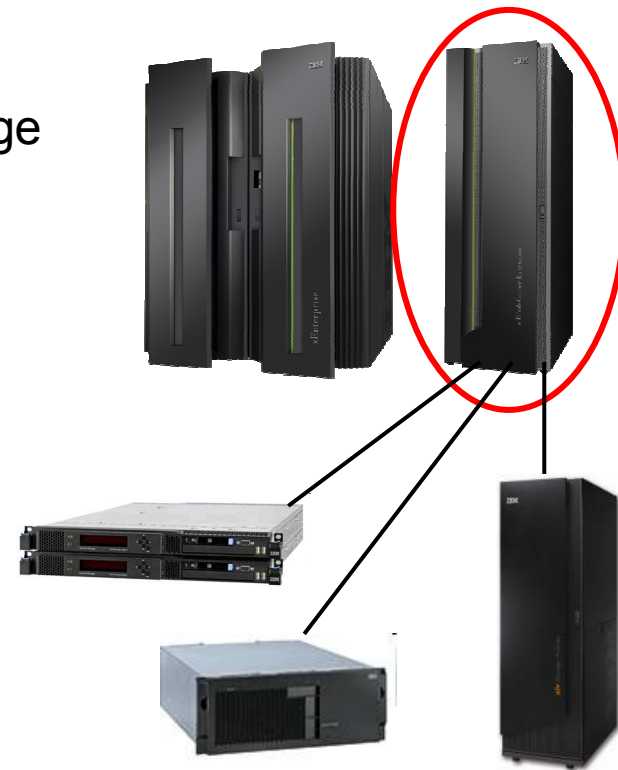
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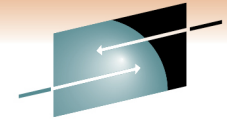
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Flexible disk options for zEnterprise

- For users who want to maintain separate storage for mainframe and open data on zEnterprise
 - IBM XIV® Storage System
 - SVC (virtualization)



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IBM XIV Storage System

For clients that want to keep open data on open disk

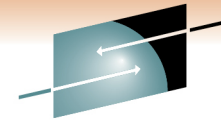
- Revolutionary disk system designed to provide
- Self-tuning for consistently high performance
- Self-healing for consistently high reliability
- Extreme management simplicity
- Low total costs
- Supports most popular distributed server platforms, as well as Linux® on System z and z/VM®



Supports most popular distributed server platforms, as well as Linux on System z and z/VM

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SAN Volume Controller (SVC) disk virtualization



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Similar to DFSMS, SVC provides important storage management functions for z/VSE™ and Linux on z

Disk virtualization system that...

- Helps improve storage utilization
 - Make better use of existing storage and control growth
- Helps improve application availability
 - Make changes to storage and move data without taking applications down
- Helps simplify management
 - Greater efficiency and productivity for storage management staff
- Offers network-based replication
 - Helps enable greater choice when buying storage
- Enables z/VSE or Linux on z to use storage otherwise not supported
- Storage virtualization complements server virtualization with LPAR or z/VM

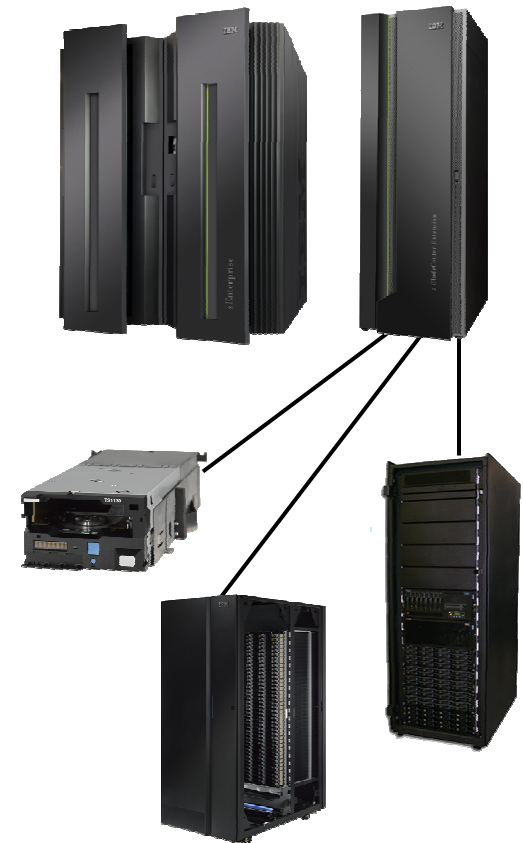


SVC simplifies deployment of zEnterprise because it enables clients to continue using their existing storage and sharing storage and management between zEnterprise and other servers

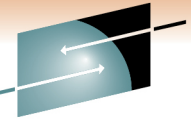
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Data protection for zEnterprise

- For secure, efficient data backup and archiving
 - ProtecTIER® data deduplication solution
 - z/OS Distributed Data Backup
 - IBM Information Archive



Superior data protection & archiving for zEnterprise



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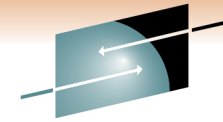
- **Extensive tape and disk options**

- Enterprise tape offerings for long-term retention and archiving
- Scalable virtual tape solution for disk-to-disk backup
- Enhanced **ProtectTIER® data deduplication** solution enables high performance and high scalable data reduction
 - Reduced complexity of backup processes thru remote IP-based replication and consolidation
 - Improved recovery point and recovery time objectives for disaster recovery and business continuance
- New DS8000 **z/OS Distributed Data Backup** can reduce IT infrastructure and management costs
 - Enables consolidation of mainframe and open backup onto one managed by zEnterprise
 - LAN-free backup
 - Requires Innovation Data Processing backup software
 - Additional efficiency and cost benefits when combined with ProtecTIER data duplication
- **IBM Information Archive** for advanced management and enforcement of data retention policies

- **For more on archiving see**

- **Session 9008: DFSMS Object Support: Data Archiving with OAM, Wednesday at 1:30 PM**

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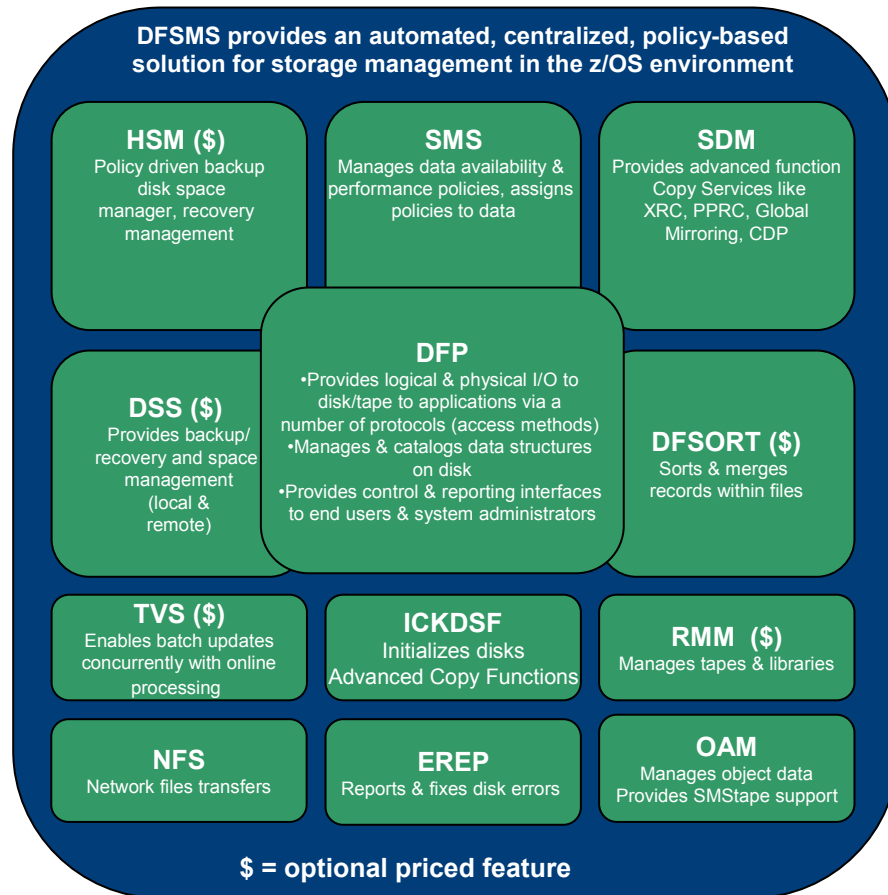


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DFSMS™: Providing System Managed Storage on z/OS®

Storing, managing, protecting, and serving data on a zEnterprise System

DFSMS strategy addresses explosive growth and management of customer data



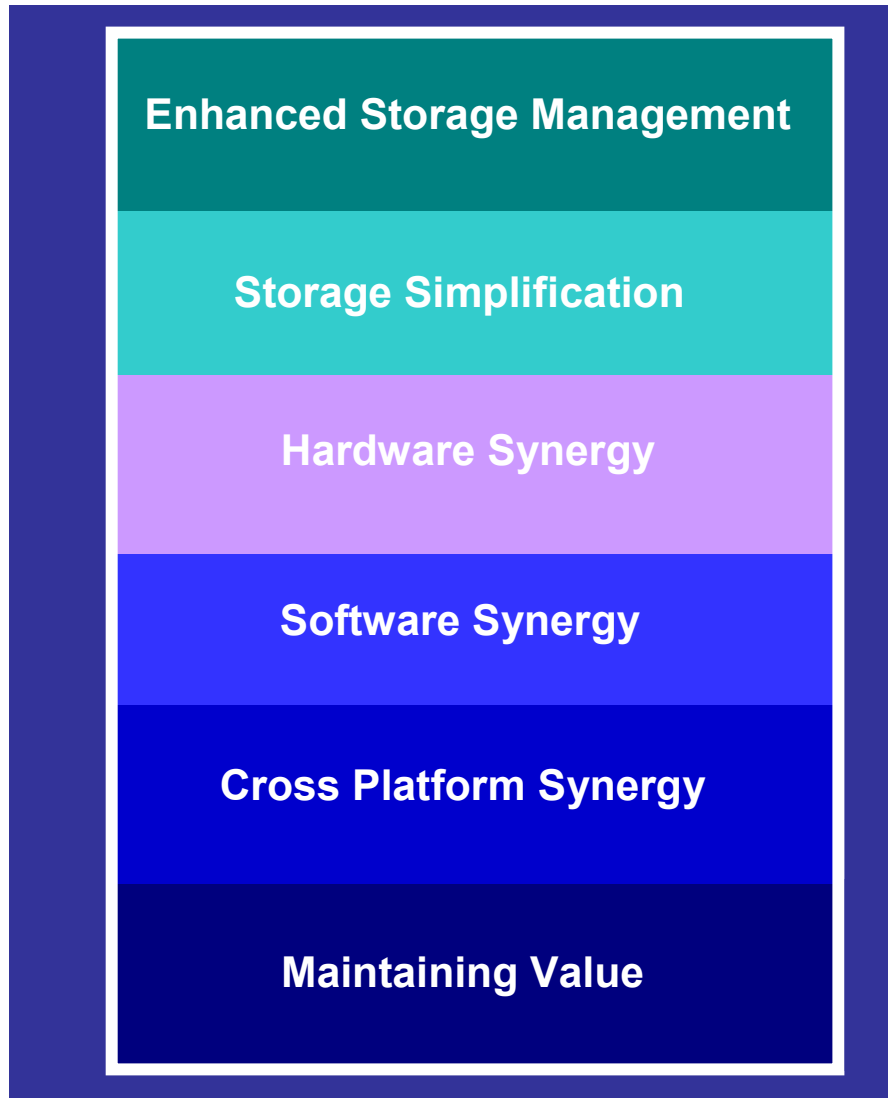
- DFSMS drives value as the data hub for System z:

- Creates integrated solutions by exploiting new hardware features
- Maintains leadership in policy based storage management
- Strengthens business resiliency by exploiting new opportunities and advancements in data protection solutions
- Supports growing businesses and mission critical workloads by providing continuous availability, scalability/performance and flexibility of storage and data
- Enables cross platform data and storage

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DFSMS + Storage + zEnterprise Strategy*

Smart movement and management of information and capacity growth without complexity



▪ Enhanced Storage Management

- Archiving
- Storage Tiers
- Continuous Data Protection w/DB2

▪ Storage Simplification

- Storage Management Simplification (with z/OSMF and with Tivoli)

▪ Hardware Synergy

- Disk and Tape

▪ Software Synergy

- DB2, CICS, IMS, and CM
- GDPS
- Tivoli

▪ Cross Platform Synergy

- Open System Data / Device Usage
- zEnterprise
- NFS
- Storage Cloud

▪ Maintaining Value

- Customer Requirements
- Scaling, Performance
- RAS Enhancements

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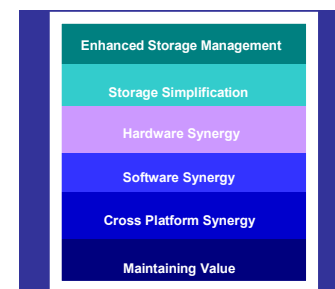
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Enhanced Storage Management*

Expand System z storage capabilities, enhance data recovery solutions, and reduce TCO



- **Archiving**
 - With continued data growth and an increased focus on data security, compliance and governance, archived data is a key data management growth opportunity.
 - For unstructured data, one of the more critical needs in OAM is to support additional storage options.
 - OAM is adding a file system layer to the disk level of their storage hierarchy. This will support both zFS and NFS mountable storage devices (R13).
- **Storage Tiers**
 - DFSMS, through policy management, already plays a significant role in this area; however, new technologies have introduced significant variations within the disk tier.
 - New opportunities exist to
 - Reduce the total cost of ownership (TCO) of managing data by placing it on the lowest cost storage that meets the business needs of the data.
 - Provide policy-based, automated data movement that will achieve a data set's performance goals.
 - Provide tools and services that will assist customers with establishing the appropriate business goals and data management policies for their data.
- **Continuous Data Protection w/DB2**
 - DFSMSHsm has been working with DB2 for the past several z/OS releases to provide zCDP support through the use of copy pools (for fast replication).
 - Support provides data protection at the system, data base, volume, and file level. With the final phase of the initial support delivered in z/OS V1R11, customers are able to recover any file to any point in time from the system-level backup.
 - Recent enhancements (R12) include
 - Space Efficient FlashCopy
 - Fast Reverse Restore
 - Recover copy pool from tape
 - Volume Preferencing



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Storage Simplification*

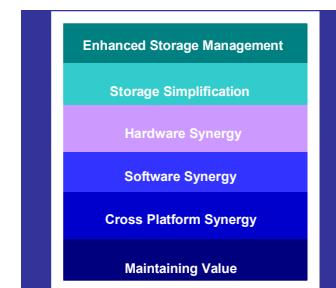
Make storage simpler to manage on System z with integrated products for smarter solutions



- **Storage Management Simplification**

- As the amount of storage continues to grow, the complexity and added management costs associated with that storage continues to increase.
- Customers require ease-of-use enhancements to simplify day-to-day tasks associated with installing, configuring, administering and maintaining their storage.
 - A specific pain point is the number of steps required to add storage dynamically to System z.
- DFSMS has an effort to address the complexity associated with "adding storage to a storage group".
 - To help simplify this process, a z/OS Management Facility (MF) application (SMA) is being designed to provide a wizard-type interface to step storage administrators through this process (R13).

“The cost of actual capacity is now so low it’s almost free. However, the costs of dealing with the files that are stored are huge and rising.” -- Storage Magazine Online, Feb. 2011



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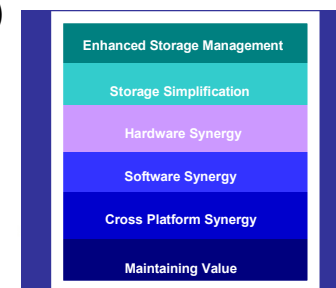
Software Synergy*

Enable System z middleware stack to meet growing needs for scalability, performance and business resiliency

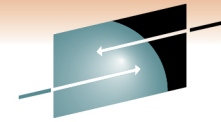


- **System z Middleware Stack**

- Collaborative efforts to provide enhancements which enable DB2, CICS, IMS and CM to meet the growing needs of their customers in terms of scalability, performance and business resiliency.
 - DB2: DFSMSHsm zCDP support (business resilience)
 - DB2: SMS dataset separation by volume (optimization)
 - DB2: XTIOU and uncaptured UCBs (scalability)
 - CICS: OAM OSR function enabled in CICS Threadsafe environment (performance)
 - CM: OAM File System support
 - All: EAV (scalability)
- Make storage simpler to manage through continued Tivoli System z Storage Management integration
 - OMEGAMON XE® for Storage on z/OS v4.2.0 enhancements
 - *Support for DFSMSrmm*
 - *Additional DFSMSHsm function and attributes*
 - *Toolkit enhancements (GUI dialogs for IDCAMS and DFSMSrmm requests)*



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IBM Tivoli System z Storage Solution

Tivoli zStorage Management Suite -Tightly Integrated Products

Tivoli Advanced Reporting and Management for DFSMSHsm

Tivoli Advanced Backup & Recovery for z/OS

Tivoli Advanced Allocation Management for z/OS

Tivoli Advanced Audit for DFSMSHsm

Tivoli.
OMEGAMON XE
for Storage on z/OS

Tivoli Automated Tape Allocation Manager

Tivoli Advanced Catalog Management for z/OS

Tivoli Tape Optimizer

DFSMSdss

DFSMSHsm

DFSMSrmm

DFSMSdfp

•For more on Tivoli System z Storage Management products see:

- Session 8856: Top 10 Problem Solving Scenarios Using OMEGAMON And The Tivoli Enterprise Portal, Thursday at 11:00 AM
- Session 8966: Managing HSM so that HSM doesn't manage you!, Friday at 8 AM
- Session 8964: Simplifying ICF Catalog Management with Tivoli ACM for z/OS, Wednesday at 8 AM

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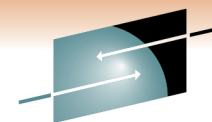
IBM Tivoli System z Storage Management



- ***IBM Tivoli Solution Addresses Key Storage Management Issues:***
 - Application Performance
 - Efficient Device Management
 - CPU & Storage Cost
 - Storage-Related Outages
 - Data Integrity
 - Storage Administration Productivity
- ***Easy to use GUI interface shared with other System Management tools***
 - Improves efficiency
 - Provides visibility into your storage environment
 - Gives you the control you need to manage
 - Automates repetitive or programmable actions
 - Fosters integrated management methodology (breaking down organizational silo's)
 - Reduces learning curve

Cross Platform Synergy*

Enable data sharing across platforms and enhance management of open system data



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- **Managing Open Data**

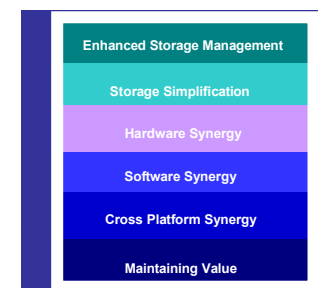
- DFSMS (DSS and HSM) manage file system data at the file system level, but not at the individual file level.
- Customers have requirements for the same application to manage their traditional "structured" data as well as their zFS (file system) "unstructured" data.

- **zEnterprise**

- New accelerators and the x86 specialty blade enables System z to host new customer applications. Customer will be able to run mainframe and open system applications under the same platform.
 - Critical in this environment is NFS which is used today to access data across platforms.

- **NFS**

- The z/OS NFS Server provides the ability for non-z/OS operation system platforms to access the data on z/OS, thus allowing data to remain on the platform.
 - Short term focus items have addressed performance, scalability and business resilience.
 - Continued exploitation of NFS protocols and currency.
- Critical to the z/OS platform is the ability for applications (such as DFSMSdfp OAM) to store and access data on NFS mountable storage devices.
 - The z/OS NFS Client plays a critical role in this data exchange and opens the z/OS platform to additional (non-traditional) storage options.



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Thank you!



■ **IBM's commitment to the mainframe helps deliver:**

- Extreme scalability, and availability
- Reduced costs and simplified IT infrastructure
- High performance and energy efficient technologies
- a resilient and security rich system



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