



Technical Forum & Executive Briefing

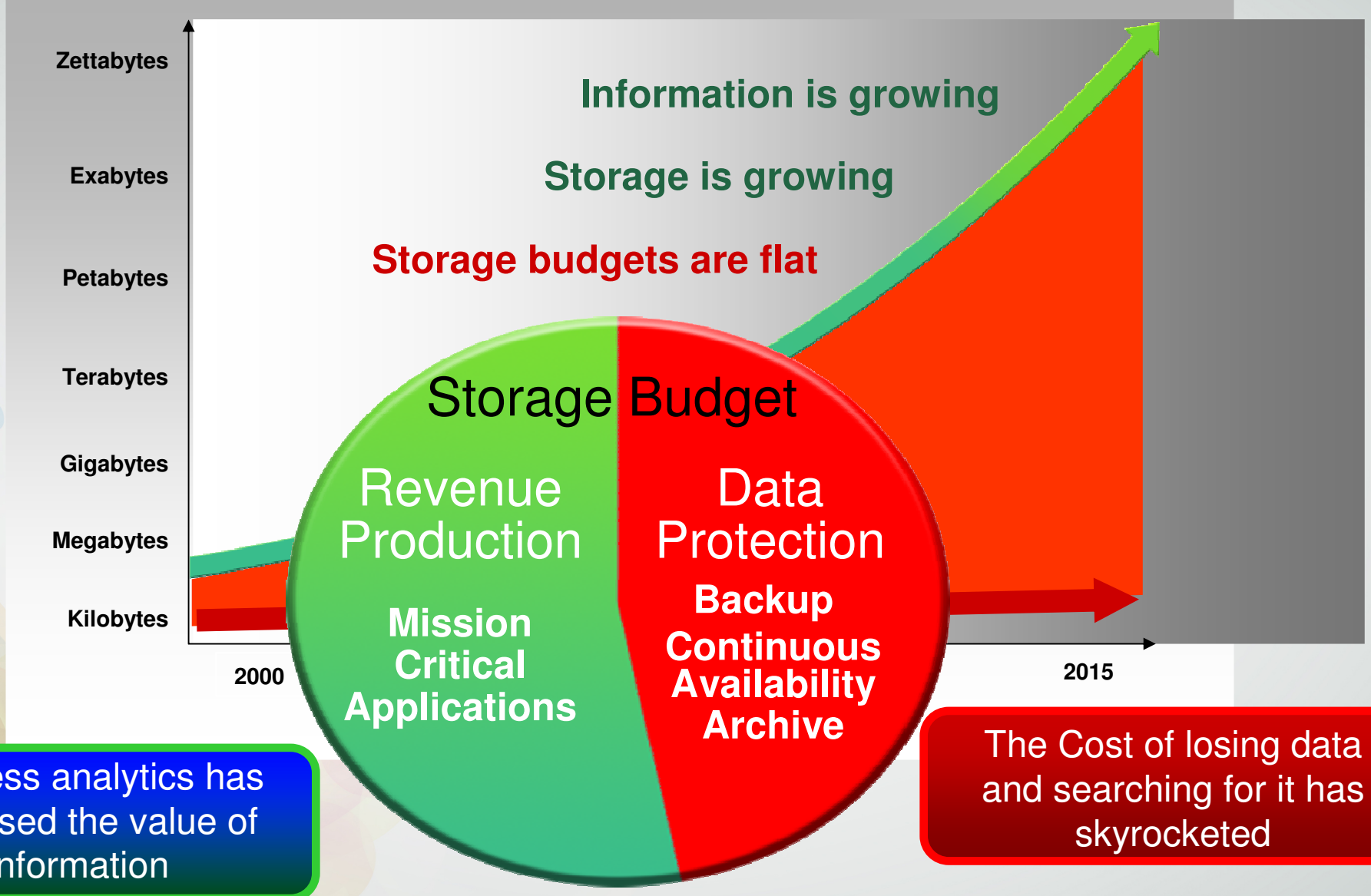
17 al 21
Octubre
2011

Expect More from Your Storage

... and Your Storage
Provider

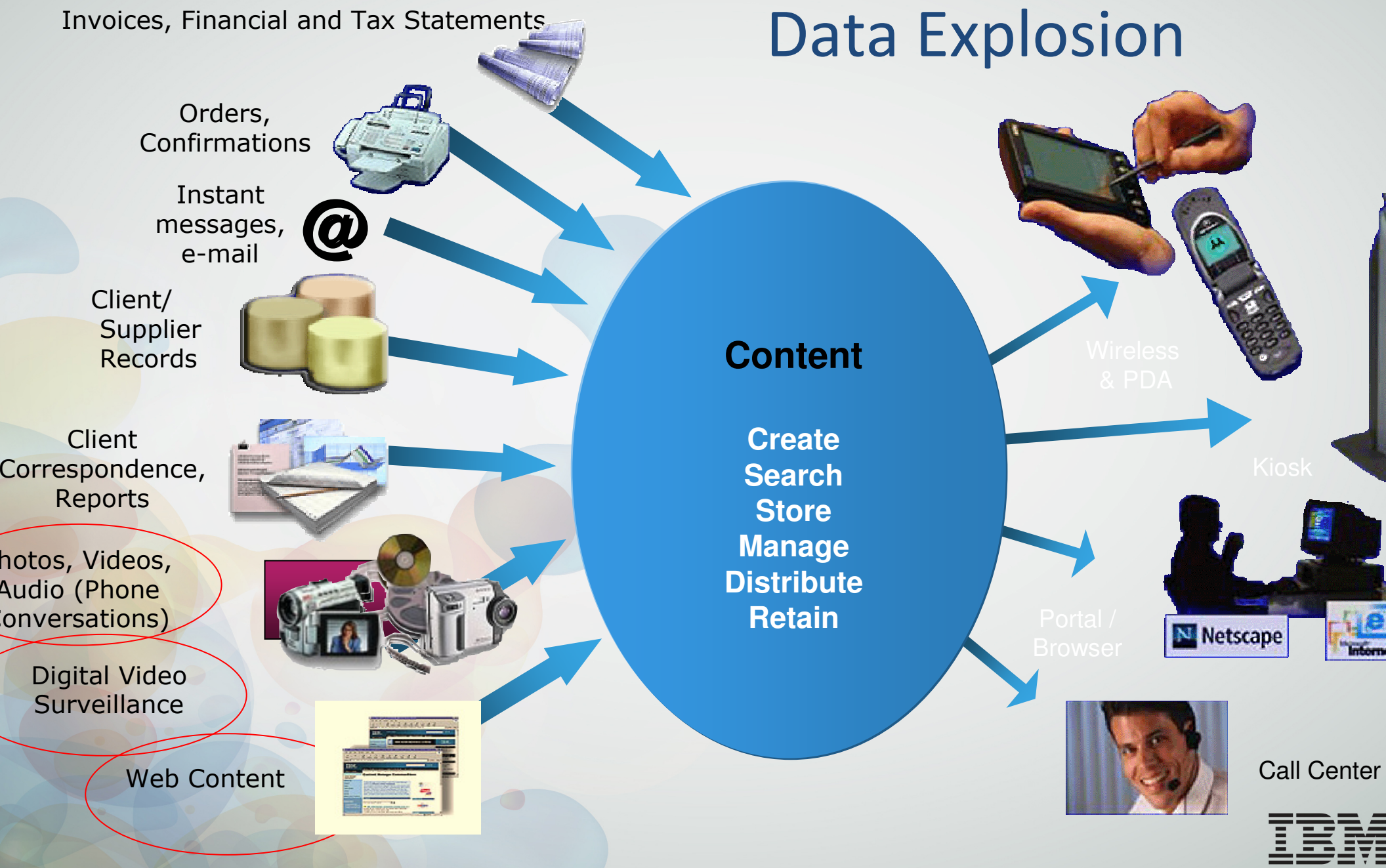


The Storage Efficiency Challenge



Many companies are spending money in ways they'd rather not

Data Explosion



IBM heritage of innovation and leadership in storage

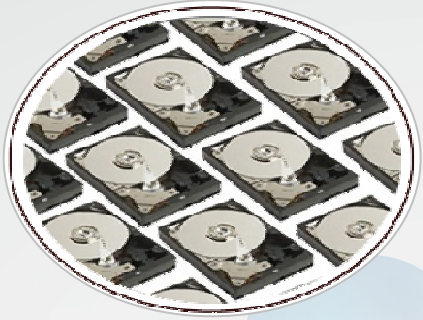
IBM patent leadership for 18 consecutive years (total patents & storage patents)



1956

First magnetic hard disk drive

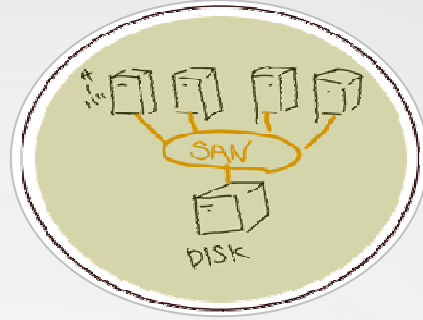
IBM 305 RAMAC (Random Access Method of Accounting and Control). Capacity of the 305's 50 two-foot diameter disks was 5 megabytes.



1993

First distributed storage

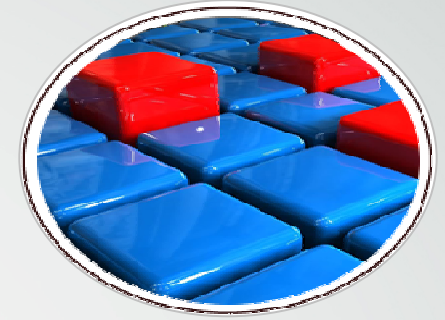
IBM 9337 Disk Array Subsystem is first reliable storage system using multiple, low-cost disk drives as single logical unit.



2003

Storage network virtualization

IBM SAN Volume Controller provides single, centralized point of control over data in heterogeneous storage environments.



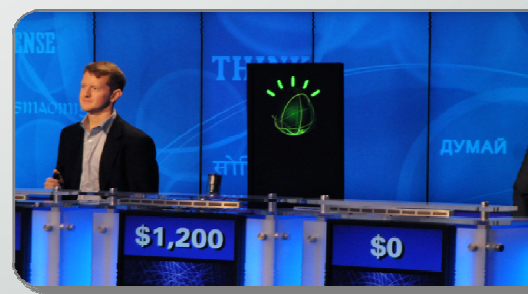
2010

First Intelligent data placement

IBM System Storage Easy Tier first to automatically move most active data to faster solid-state drives for real-time analysis and less urgent data to tape.

Storage Acquisitions: 2008 XIV, FilesX and Diligent 2010 Storwize, Inc.

2, 2011: **IBM Researchers Demonstrate Breakthrough Storage Performance for Big Data Applications - IBM GPFS Storage Technology** reads 10 Billion Files in 43 minutes shattering the previous record of by a factor of 37.



Analysts Respond - IBM Storwize V7000 in 2010

...Analyst's respond, The Clipper Group, and Mesabi Group

The IBM Storwize V7000 embeds the best of IBM's storage technology into an easy-to-deploy architecture. This new mid-range storage system offers layers of additional software for virtualization, solid-state optimization, and thin provisioning without requiring any integration by storage administrators. They only have to plug it in, follow the wizards, and migrate the data - just what the doctor ordered!"

Mike Kahn, Managing Director and Founder, The Clipper Group, Inc..

The IBM Storwize V7000 utilizes automatic solid-state storage optimization with IBM Easy Tier, providing up to 300% performance increase for I/O bound applications by migrating the most active data to solid-state storage. Easy Tier moves small data extents, rather than entire volumes, so it makes very efficient use of expensive solid-state storage."

David Hill, Mesabi Group

Value to You: Financial Institution – Storage Less Data

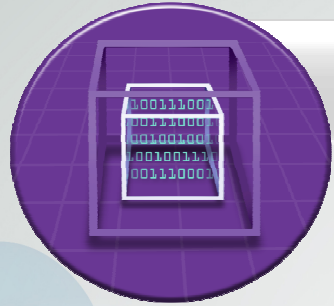
Helped boost performance for future growth and created virtualization of existing storage that provides easy migration of the current storage infrastructure. Additionally, the remote replication for archiving and disaster recovery has been a great benefit to the bank.



Helpful Tips

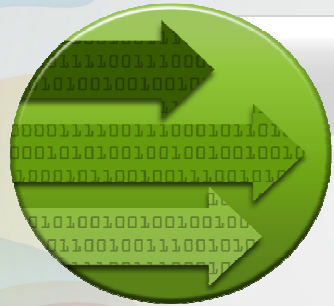
We not only virtualize the storage, improving utilization from 30% up to 80%, we then add thin provisioning and make your storage dollar stretch further... But it doesn't stop there - can efficiently snap copies of data to make back ups quick and super easy. IBM - it's a snap!

Technology and best practices enable storage efficiency



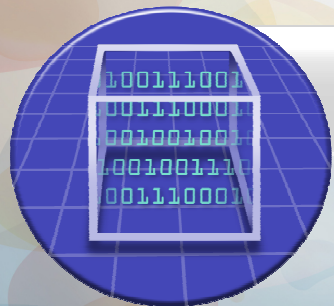
Stop Storing So Much

- Data Compression
- Data Deduplication



Move Data to the Right Place

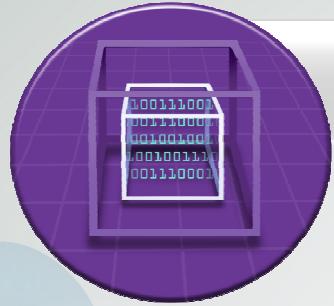
- Automated Tiering
- Automated Data Migration



Store More with What's On the Floor

- Storage Virtualization
- Thin Provisioning

Technology and best practices enable storage efficiency



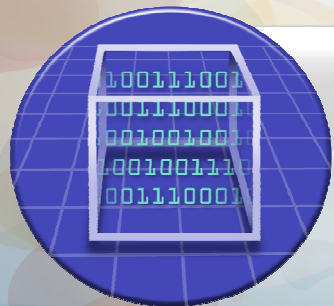
Stop Storing So Much

- IBM Real-time Compression ... up to **80%** less space
- IBM ProtecTIER ... up to **95%** smaller disk backups



Move Data to the Right Place

- IBM Easy Tier ... up to **3 times** more performance with just **2%** solid-state



Store More with What's On the Floor

- IBM Storage Virtualization ... up to **30%** more utilization
- IBM Thin Provisioning ... up to **35%** more utilization

Today, Expectations Continue to Rise *And Business and IT are moving faster* *respond*

Business Leaders

- Find new customers
- Bring products to market
- Identify new revenue streams

IT Leaders

- Run business applications
- Access information
- Bring new applications online



Cloud Computing
Faster File Systems
Faster Applications

IBM Storage manages the rapid growth of unstructured data

IBM Active Cloud Engine™

Moves files where they're needed, when they're needed ... across the array or throughout the cloud

With competitor's clouds, users have to chase their data

- **Global Clouds** – All files appear to be local. Scan billions of files in minutes
- **Files Move with the User** – Fast access anywhere; no manual replication required
- **Policy Based Administration** – Manage multi-site clouds with less complexity



Technology Integration Continue...

...IBM brings you the IBM Storwize V7000 Unified Storage System



IBM Storwize V7000 Unified

What this is

- Unified block and file storage system with a tightly integrated management console
- Support for NFS/CIFS/FTP/HTTP/SCP file protocols in addition to existing block functions
- File replication and file level snapshots for business continuity and disaster recovery

6U



Why It Matters

- Provides greater flexibility for provisioning of storage resources and improves overall capacity utilization
- Unified console simplifies storage administration with a single user interface and common CLI
- Enables deployment of a broad set of applications from within a single storage system, especially in shared storage environments

What's Different About Storwize V7000 Unified?

Based on highly successful Storwize V7000 block storage system

Fully integrated user interface for block and file data simplifies management

- Not a "unified" launcher for two different interfaces, one single GUI

Simple USB key based initial setup: extends successful Storwize V7000 approach

IBM Active Cloud Engine™ technology delivers automated storage efficiency capabilities

- True policy-based management of files
- With user-defined policies!

Built-in IBM Tivoli Storage Manager client simplifies backup to TSM server

- System also supports NDMP for third-party backup clients

*...bring you a powerful
...block and file storage system*

*one that is actually... **Unified***



Benefits to You - IBM Storwize V7000 Unified

Modular, midrange disk storage that grows as your needs grow

- Scales to 480 HDDs (twenty 24 bay control enclosures)

Support for 10Gbps iSCSI server attach

- Up to 7x improvement in iSCSI throughput vs. 1Gbps iSCSI
- Upgradable from existing Storwize V7000 systems

Enterprise class capabilities in a midrange offering

- Virtualization, thin provisioning, FlashCopy, Easy Tier all built in
- Sophisticated local and remote mirroring

High Performance in a Midrange Disk System

- Up to almost 1M IOPS
- Up to 82,000 IOPS for “database-like” 70/30 R/W workload

Easy to set up and manage

- Innovative, intuitive GUI eliminates complexity
- Non-disruptive data migration included, unique in a product of this class

Ushering in a new era in storage efficiency

- Save up to 75% of space using space efficient FlashCopy
- Increase disk utilization up to 30%

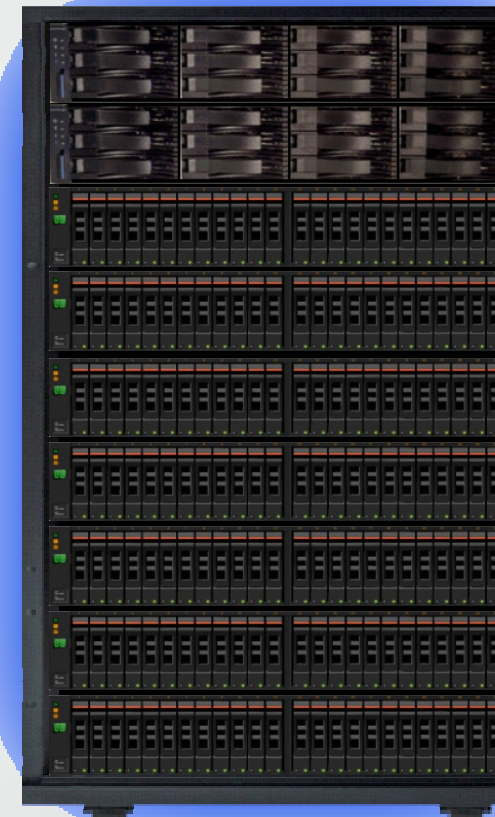
Investment protection

- Virtualize external storage arrays and extend asset life

IBM Active Cloud Engine™ with V7000 Unified

- Cloud Storage is an attractive means of delivering storage services saving both time and cost

Expand Easily



Start Small

while



Storwize V7000 Clustered Systems

Scale UP and/or OUT as business requirements grow



- **SCALE OUT to add performance**
- **Clustered systems provide smarter scalability**
- Buy only as much capability as you need, when you need
- Increase performance, connectivity and cache
- Clustered system operates and is managed as a *single system*

Non-disruptive scalability vs disruptive controller swaps

- **SCALE UP to add capacity**

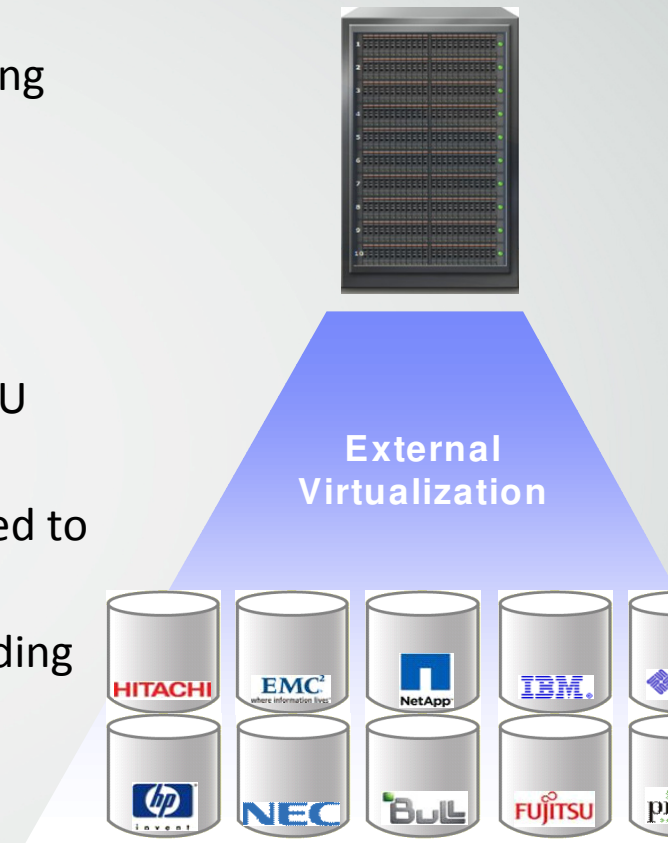
IBM Storwize V7000 Unified - Virtualized Storage

IBM Storwize V7000 Unified storage is virtualized

- Enables rapid, flexible provisioning and simple configuration changes
- Enables non disruptive movement of data among tiers of storage, including Easy Tier
- Enables data placement optimization to improve performance

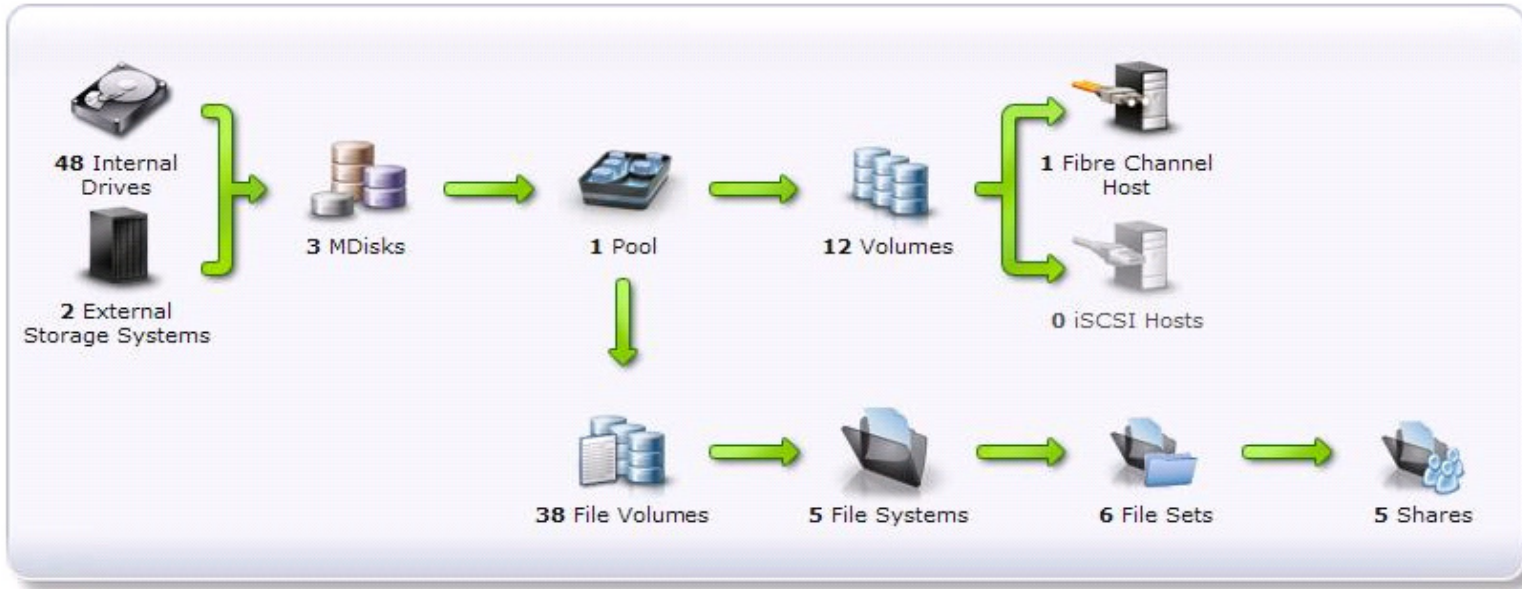
Storwize V7000 Unified also virtualizes external Fibre Channel storage

- Capacity from existing storage systems becomes part of Storwize V7000/U system
- Single user interface to manage all storage, regardless of vendor: Designed to significantly improve productivity.
- Virtualized storage inherits all Storwize V7000 Unified rich function including FlashCopy, Easy Tier, and thin provisioning.
- Helps improve existing storage utilization
- Improve availability by practically eliminating storage-related causes of application downtime.
- Migrate data from external storage to Storwize V7000 Unified storage or keep external storage as part of Storwize V7000 Unified system long-term
- Extends life and enhances value of existing storage assets
- Supports storage systems from IBM, EMC, HP, 3PAR, Sun/Oracle, Hitachi, NetApp, Fujitsu, Bull, Compellent, NEC, Pillar, and more.



kq458vb.ibm > Home > Overview

Suggested Tasks



Overview

[Watch e-Learning: Overview](#)

Welcome!

The diagram represents all of the objects that need to be configured. To learn more about each object, click the icon in the diagram. For some objects, e-Learning modules include a tutorial of the steps that are required to complete the task. To configure these objects, either select the associated task from Suggested Tasks or use the icons in the left navigation.

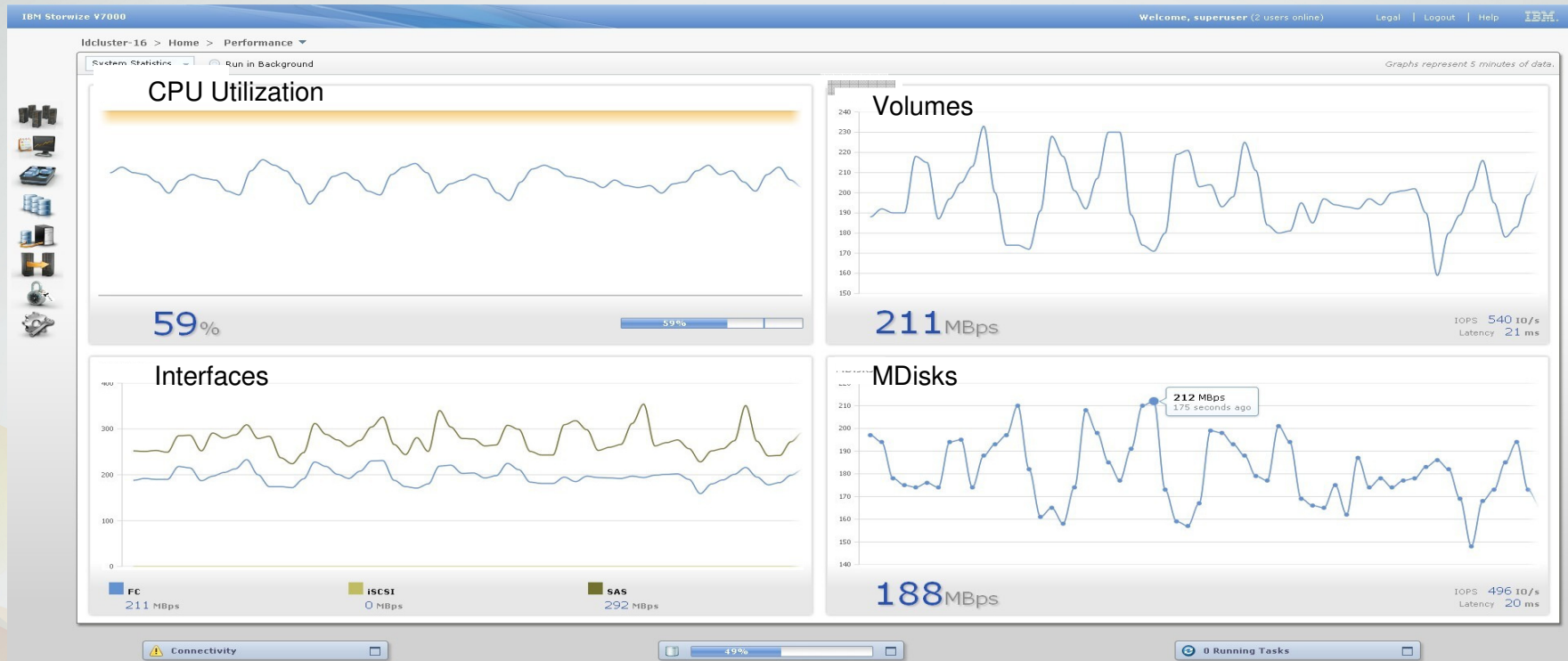
[▶ Visit the Information Center](#)

IBM Storwize V7000 Unified Integrates Storage Administration

- Integrates file and block applications in a single storage system
- Adds supports for file access protocols - NFS, CIFS, FTP, HTTPS, SCP
- Supports file replication and snapshots for business continuity



Real-time Performance Statistics



Gathers system level performance statistics (CPU utilization; port utilization and I/O rates; volume and MDisk I/O rate, bandwidth, latency) in real time with sampling rates down to 5 sec.

Provides a snapshot view for immediate monitoring with 5-minutes of performance history

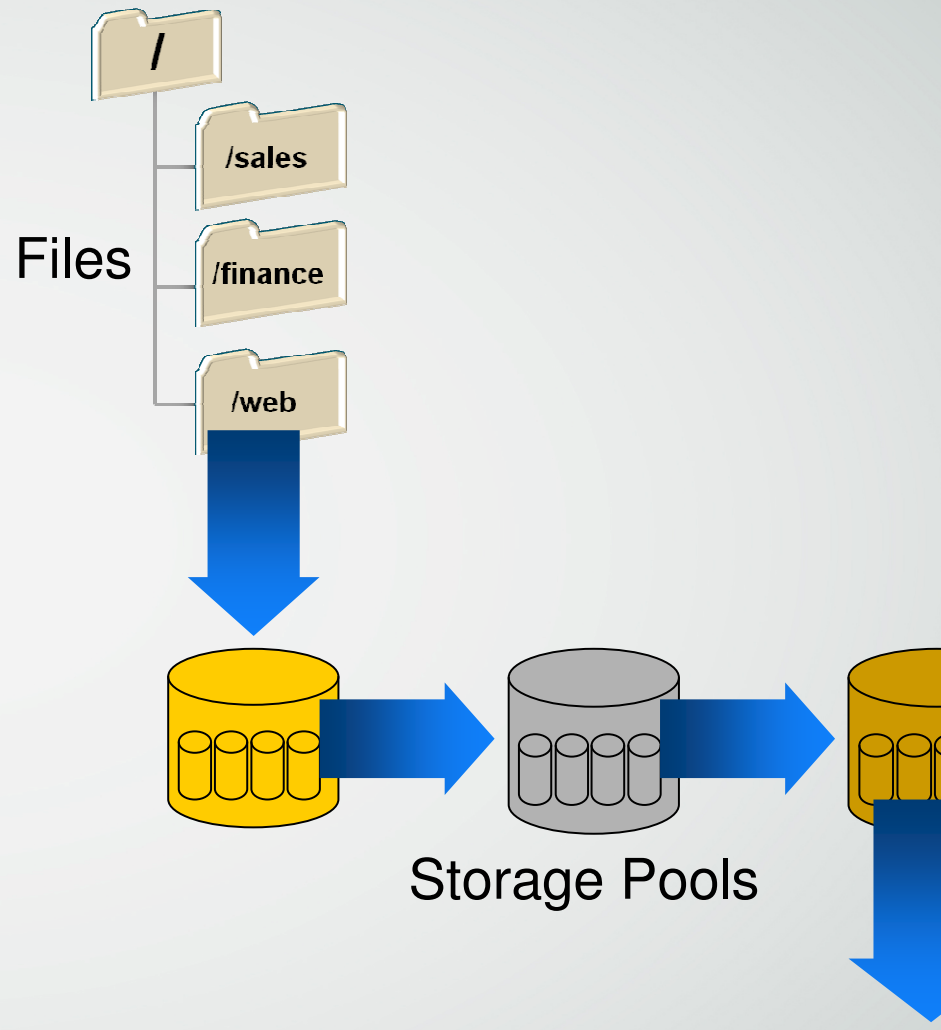
- Get “immediate” monitoring during environmental changes
- Troubleshoot sudden drops in performance
- Pair up with TPC for complete performance solutions

IBM Active Cloud Engine™ for Storwize V700 Unified

ew!

Policy-based File Administration

- **Optimize performance** by placing files onto the most appropriate storage pool
- **Lower storage costs over time** by moving inactive files to archive disk or tape, and deleting unwanted, expired files
- **Improve administrator productivity** by automating file management
- **Improve data protection** with policy-based file backup



Migrate inactive data to tape, tape lib, or de-duplication device via TSM Server



The Power of One – IBM Storwize V7000 Unified

- **One** system
- **One** management framework
- **One** GUI
- **One** unified block and file solution

IBM Storwize V7000 Unified supports a 6U block and file solution managed from one GUI

IBM Active Cloud Engine™

Further enhanced GUI

Enterprise-class capability

High performance in a midrange disk system

Integrated non disruptive migration function

Integrated no-charge Easy Tier function

Integrated no-charge thin provisioning function

Similar benefits to SVC when virtualizing external storage



IBM & VMware Alliance



- **Global Alliance Partners**

VMware and IBM deliver a full range of virtualization, business continuity and cloud computing solutions that enable customers to simplify their IT infrastructure and improve manageability.

VMware virtualization on IBM platforms reduces costs, saves energy and space in the data center and improves the ability of IT to address business needs.

With highly-resilient platforms, companies can virtualize their most business-critical workloads. Solution offerings based on VMware vSphere span IBM System x and BladeCenter servers, [IBM System Storage](#), services, and software.

- **On-going Commitment**

The VMware and IBM dedicated partnership will continue to design, develop and test virtualization solutions that redefine industry standards that customers can trust.

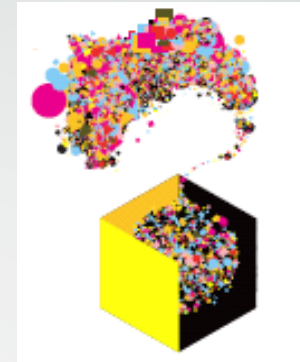
- **IBM is a Global VMware Authorized Training Center**

<http://www.vmware.com/solutions/partners/alliances/ibm-home.html>



The Benefits of Server Virtualization

- Get more out of your existing resources
- Reduce datacenter costs by reducing your physical infrastructure and improving your server to admin ratio
- Increase availability of hardware and applications for improved business continuity
- Gain operational flexibility
- Improve manageability and security



Why wouldn't you want the same capabilities in your storage?

"... the days of focusing on physical system management are now gone. Upper-level management wants greater IT operational efficiencies. CIOs require resources to be virtualized to increase resource utilization and simplify management, and that data center energy consumption be reduced."

- Clabby Analytics, March 2009

The Benefits of Virtualization

Server virtualization & storage virtualization are complementary and help take the cost and complexity out of your IT infrastructure

Server Virtualization



Up to 30-70% TCO savings

- Up to 33-50% floor space and facility costs
- 33-70% hardware costs
- Up to 50% maintenance costs
- Up to 33% support costs

Storage Virtualization



Up to 25% less capacity needed

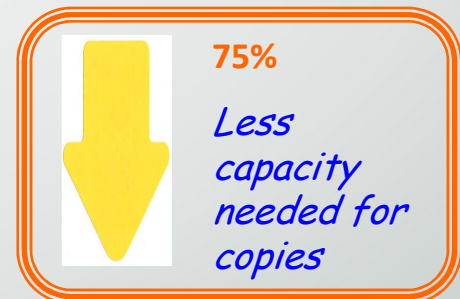
- Up to \$50,000 power savings per 1,000TBs of installed storage
- Up to 60% migration costs savings
- Up to 300% increase in utilization

Virtualization Business Benefits

- Respond to new business opportunities quickly by establishing a foundation for growth and agility.
- Process more information in real-time to make better business decisions.
- Consolidate operations and overall systems control.
- Reduce or eliminate redundancy in infrastructure and personnel.
- Improve employee productivity.

Why IBM Storwize V7000 for VMware Environments

- **Complement server virtualization extending cost savings and efficiencies to storage devices**
 - Consolidate storage through a shared storage infrastructure and increase storage virtualization savings for both internal and external disk use utilization
 - systems
 - Reduce storage acquisition costs and recurring costs for maintenance, floor space, power and cooling
 - Grow as your needs grow & lower overall costs of your VMware storage foundation
- **Capitalize on enterprise-class capabilities**
 - Built-in storage virtualization
 - Increase disk utilization by up to 30%
 - Thin provisioning for optimal efficiency
 - Right-size your disk storage by eliminating over-provisioning
 - Automated data tiering: Easy Tier
 - Optimize performance and eliminate hotspots with dynamic HDD/SSD management
 - Improve application performance by up to 200%
 - Replication services: FlashCopy, Metro/Global Mirroring
 - Improve flexibility in testing and disaster recovery plans
 - Up to 75% less capacity needed with Space Efficient FlashCopy



Why IBM Storwize V7000 for VMware Environments

- **Simplify management** and **improve administrator productivity** with an intuitive, easy-to-use interface
 - A single point of management for all multi-vendor, VMware attached disk systems
 - Easy to set up and navigate
 - Includes auto-discovery, navigation aids and preset defaults to guide administrators
 - Built-in advanced functions
 - Packaged software is preinstalled as well as premium features
 - Rapid cloning and provisioning with FlashCopy
 - Reduced requirement for performance tuning
 - Instant access to critical information and system status reporting
- **Nondisruptively migrate and mirror data** for disaster recovery
 - Greater flexibility in data protection beyond VMware SRM
 - Volume Mirroring
 - Remote Mirroring – Metro/Global
 - FlashCopy replication
 - Eliminate cost of add-on migration tools
 - Minimize downtime associated with migrating data between storage assets
 - Storage VMotion requires a CPU to move data between Datastores, while the IBM Storwize V7000 can migrate data with no CPU overhead
 - Reduce migration elapsed time from weeks or months to days
 - Increase flexibility using VMotion
 - All attached servers could potentially have access to all virtualized storage



Why IBM Storwize V7000 for VMware Environments

- **Integrate** with additional advanced offerings **for data protection, systems & storage management**
 - **IBM Tivoli Storage Productivity Center - Standard Edition and Replication**
 - Provides advanced functions like disaster recovery preparedness, configuration and change management, and storage performance optimization
 - **IBM Tivoli Storage Productivity Center for Disk Midrange Edition**
 - Provides holistic SAN management for storage to server with data path views, storage system and volume performance, simplified volume provisioning, and capacity utilization reports
 - **IBM Tivoli Storage FlashCopy Manager**
 - Provides application-centric point-in-time flash copies to provide near-instant restore in the event of a volume failure for supported applications like Oracle, Exchange, and DB2
 - **IBM Tivoli Storage Manager FastBack**
 - Provides IP based replication of Windows and Linux data as well as advanced data protection and near-instant recovery for critical Windows and Linux servers
 - **IBM Systems Director Storage Control**
 - Enables consolidated server and storage management of System x and System p environments to provide monitoring and management of key infrastructure components

Achieve greater optimization of your VMware Virtual Infrastructure

The Right Choice for Your VMware Virtual Infrastructure

IBM Storwize V7000

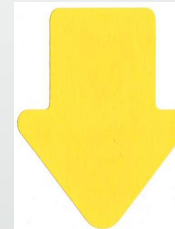
- Complements VMware server virtualization, extending *cost savings* and *efficiency* to storage devices
- Capitalizes on *enterprise-class technologies* including built-in storage virtualization, thin provisioning and automated tiering
- *Simplifies management* and *improves administrator productivity* with an intuitive, easy-to-use interface
- *Leverage replication services* to non-disruptively migrate and mirror data for disaster recovery



Increase disk utilization by up to **30%**



Increase administrator productivity up to **2X**



Reduce storage growth by up to **20%**

