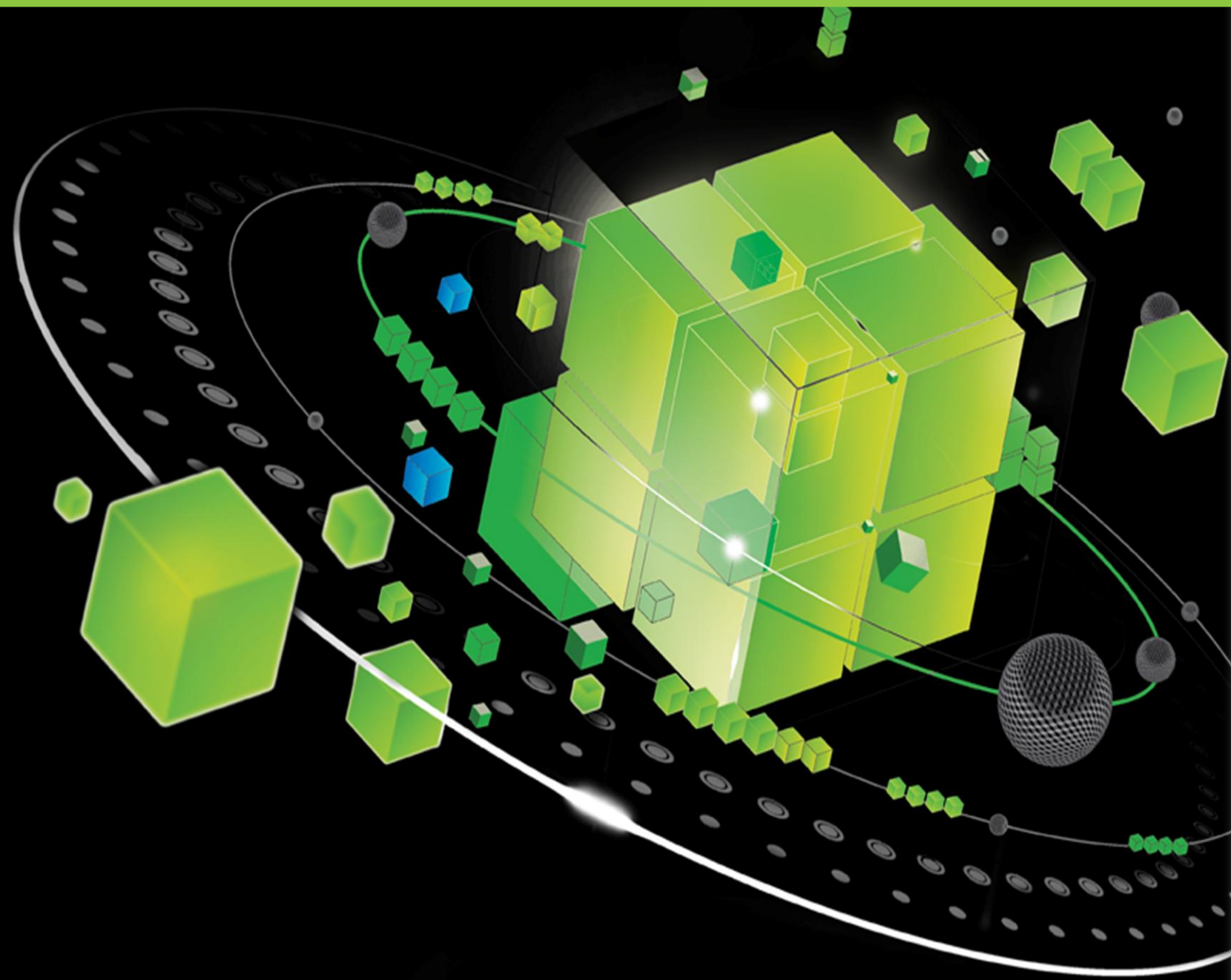


IBM Storage

A New Era in Storage Efficiency



2011 – A special year for IBM

100-year track record of innovation and progress

- Pioneering the Science of Information
- Reinventing the Modern Corporation
- Making the World Work Better



1957: FORTRAN

IBM revolutionizes programming with the introduction of FORTRAN (Formula Translator), which soon becomes the most widely used computer programming language for numerical analysis and scientific work.

1964: System/360

IBM introduces the System/360, incorporating Solid Logic Technology (SLT) microelectronics and compatible programming innovations. This first compatible "family" of computers transforms global industry—and IBM—forever.

1962: SABRE

Two IBM 360 mainframes form the backbone of the SABRE reservation system for American Airlines. Solving high-speed computers with data communications to handle real-time seat inventory and passenger records in more than 40 cities.

1969: Apollo—Man on the Moon

IBM personnel and computers help NASA put the first man on the Moon, exactly using System/360 Model 75 to calculate lift-off data for Neil Armstrong and Buzz Aldrin's Lunar Module.

Welcome to the decade of Smart

Every decade or so in computing, there is a chance to redefine the playing field.

We are in that phase of redefinition now



Welcome to the Decade of Smart



Data is changing the game

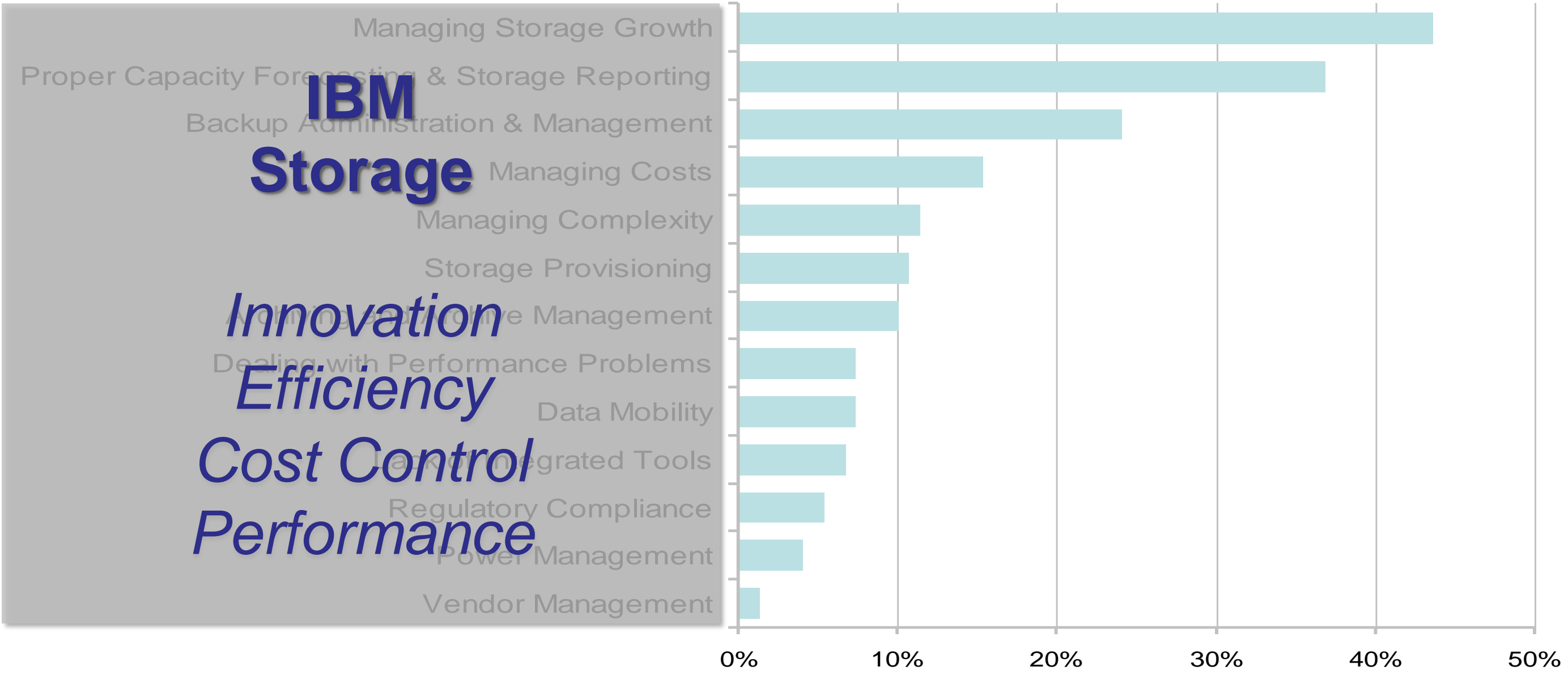


Scale and complexity bring new challenges



Smarter systems for a smarter planet

Survey - what are your two biggest storage pain points? *



* TheInfoPro Storage Study: F1000 Sample. n=149. Other n=14. *Multiple responses recorded

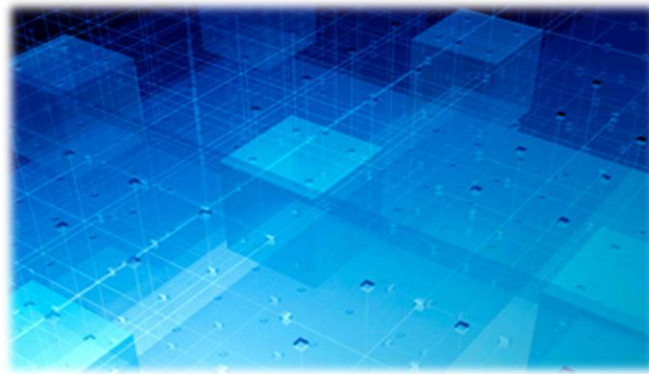
Today's data center is under pressure



7 out of 10 companies
in the Global 1000 will need to modify their
data centers to meet increased power and
cooling requirements. ¹



70 cents per dollar
is spent maintaining current IT infrastructures
rather than adding new capabilities. ²



78% of CIOs
want to improve the way they use
and manage their data. ³

1. "Best Practices to Consolidate IT infrastructures" Gartner, 2007
2. <http://www.cioupdate.com>, New-Initiatives-Spending-Versus-Keeping-the-Lights-On, 2008
3. Source: Accenture CIO Data Management Survey, 2007

Scale and complexity bring new challenges



Terabytes
of structured
online data



Petabytes of unstructured
data including real-time
streams



Simple online
transactions with
back end processing



Complex transactions
integrated with real time
analytics



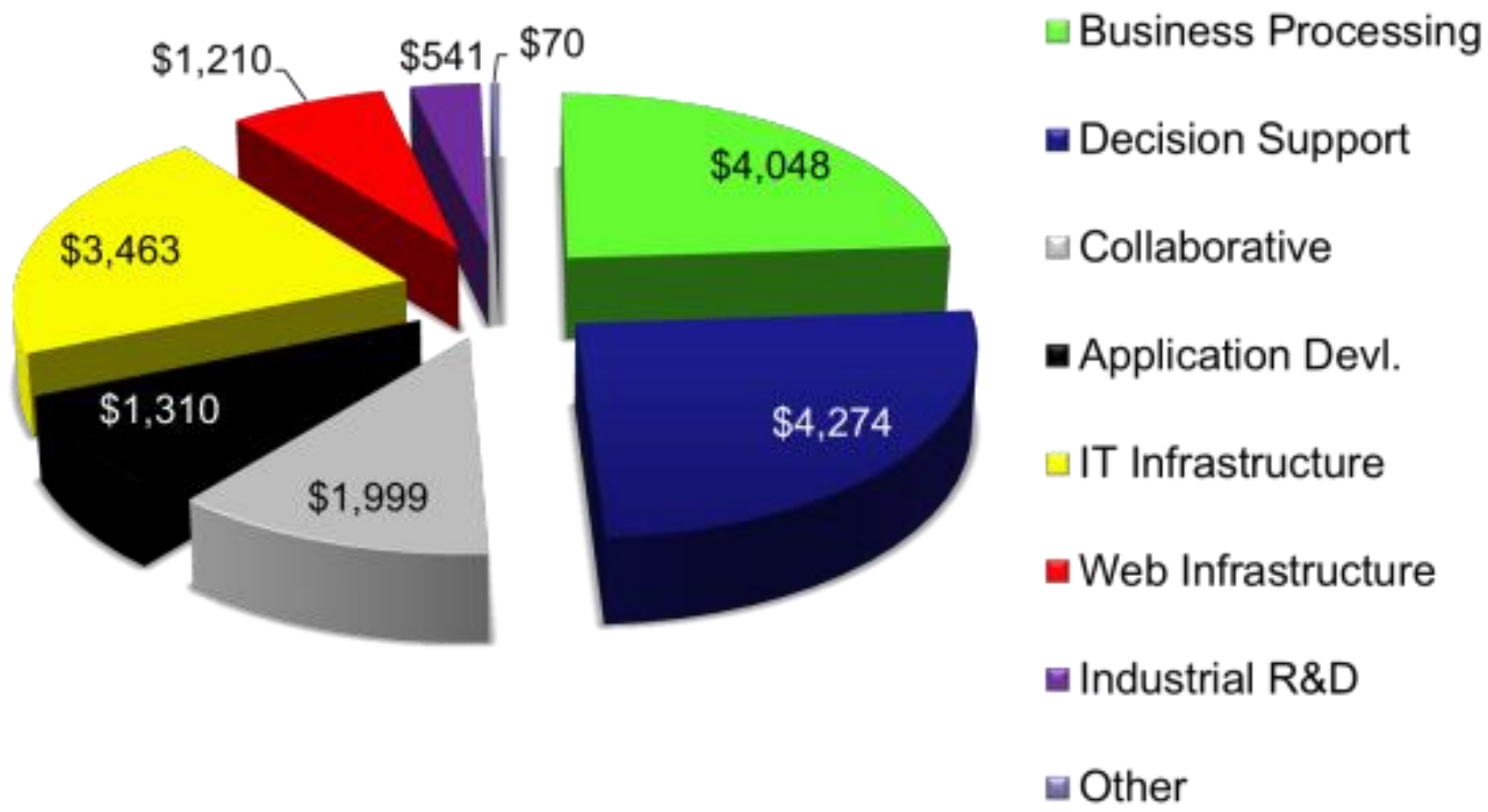
Online data
security and
intrusion detection



Security analytics for
intrusion prediction and
prevention

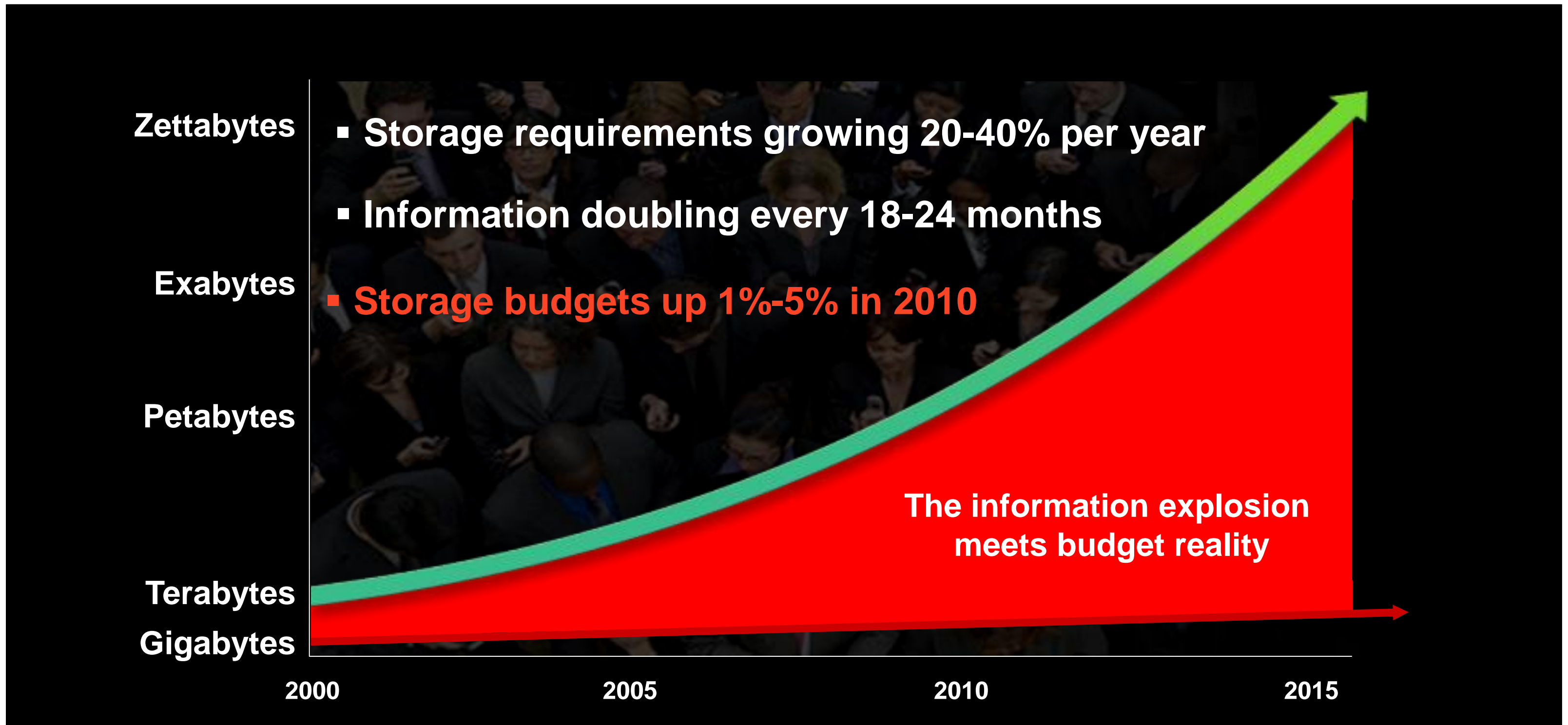
Core applications are driving data management demand

Storage Workloads 2010 Customer Revenue (\$M) 2006-2013

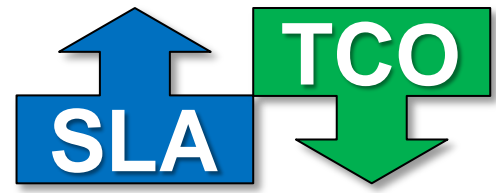


Source: IDC Storage WW Workloads 2009

Smarter Systems are creating a storage efficiency challenge



IBM Storage clients are gaining real world value



MEDIA & ENT.



Problem: Rapid data growth causing missed RPOs

Benefits: Now completely tape-less; server restores from days to minutes

Competition: EMC

BANKING



Problem: Advanced mortgage analytics performance

Benefits: 26X performance improvement; TCO reduction; Improved SLAs

Competition: EMC, HDS

INFRASTRUCTURE & FINANCE



Problem: Massive Microsoft Exchange 2010 Upgrade

Benefits: 300% faster – even with system ½ disabled; Much easier to deploy and manage; Lower TCO

Competition: EMC, HP

WIRELESS TELCO

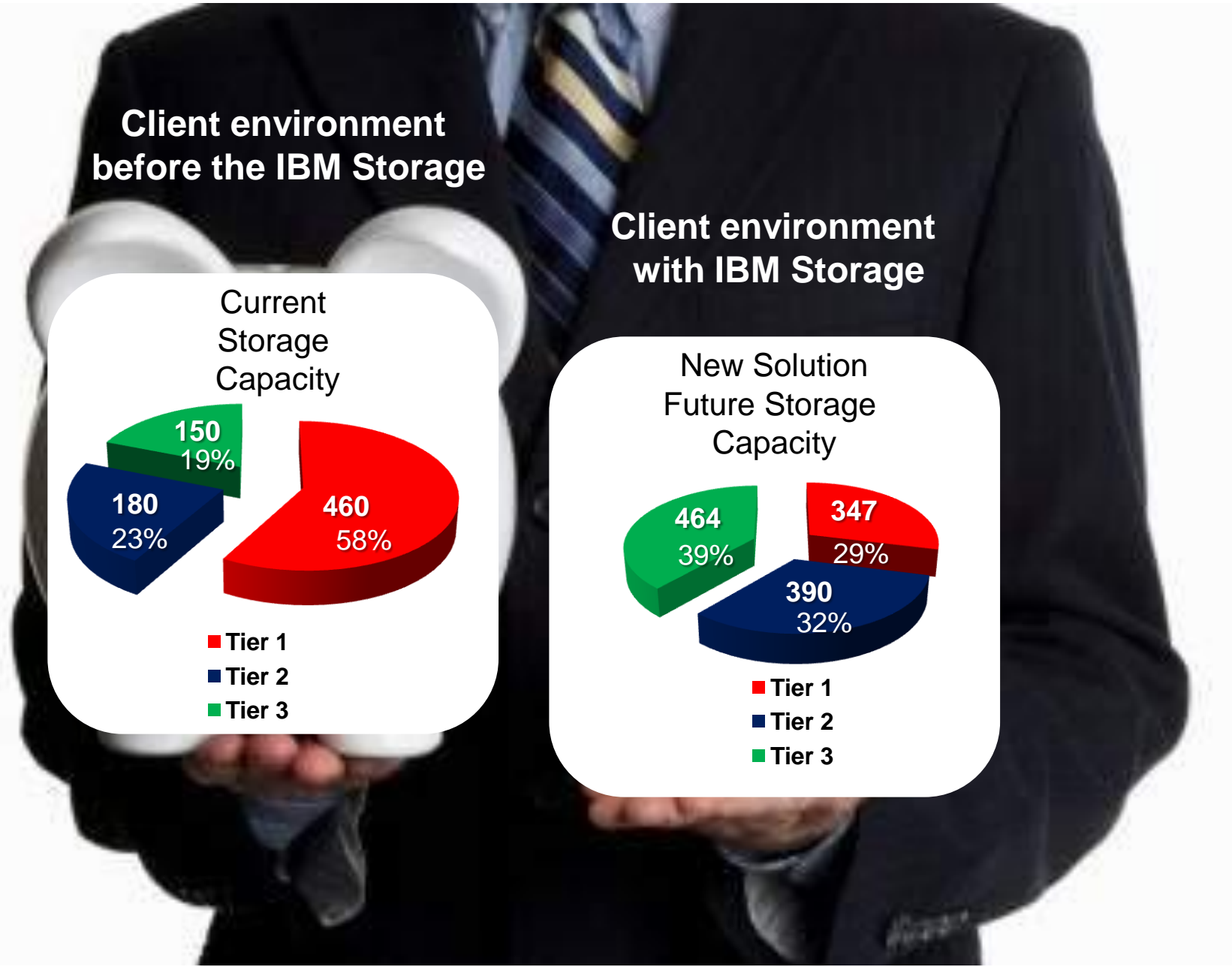


Problem: Large SAP Implementation

Benefits: 50% lower TCO; Easier; Higher performance

Competition: EMC, NetApp

Client value realized as measurable, hard dollar savings



Client will save **\$563M** over five years

Three-Year Total Cost of Ownership Study			
EMCV-MAX		XIV	
Initial Acquisition Cost	\$1,249,000	Initial Acquisition Cost	\$774,000
Yearly Operational Cost	\$367,000	Yearly Operational Cost	\$209,000
Yearly Facilities Cost	\$30,099	Yearly Facilities Cost	\$18,311
Initial Data Migration Cost	\$111,000	Initial Data Migration Cost	\$50,000
Initial Costs	\$1,757,099	Initial Costs	\$1,051,311
		Initial Savings:	\$705,788
TCO – 3 Years	\$4,184,275	TCO – 3 Years	\$2,312,573
		TOTAL SAVINGS:	\$1,871,702
		Savings %:	44.2%

- Capital and Recurring Cost Savings**
- **\$700K Acquisition Cost Savings** compared to competition
 - **\$1.8 Million in Total Cost** over three years, assuming 25% data growth.
 - **\$4.7M in savings** by utilizing XIV replication for disaster recovery compared with SRDF/A

Storage efficiency strategies and best practices



Store less data



Move data to the right place



Store more with what's on the floor

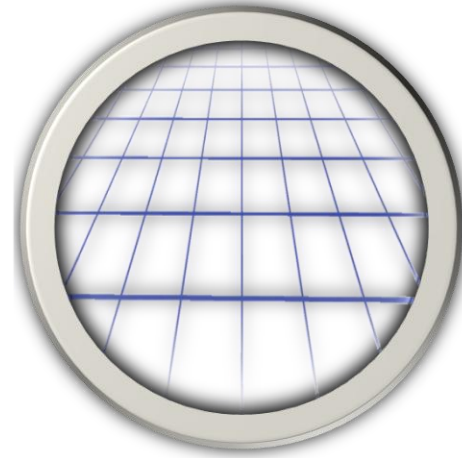
Disruptive innovation – the relentless pursuit of efficiency



2003

Storage network virtualization

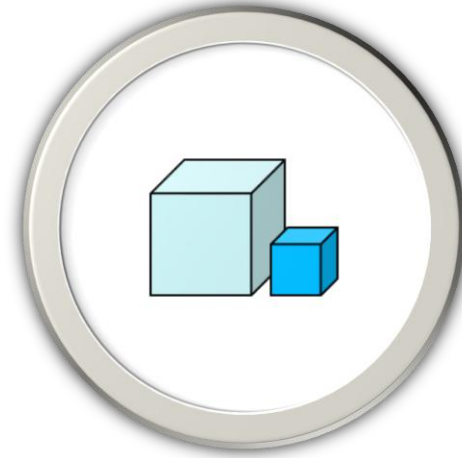
IBM SAN Volume Controller provides single, centralized point of control over data in heterogeneous storage environments.



2008

Autonomic grid storage

IBM XIV delivers best-in-class performance, availability and TCO for a wide range of enterprise workloads; compels competition to go on an expensive acquisition spree



2010

Real time data compression

IBM Real Time Data Compression introduces the first in-line compression technology suited to high performance production workloads; enables higher performance and significant TCO reduction



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.



IBM delivers today's most complete line-up of storage offerings



Tape Storage

Library Systems
Media and Drives
Virtualization
Encryption



Entry / Mid-range

Storwize V7000
DS5000
DS3000
N Series



High End

DS8000
XIV
SONAS

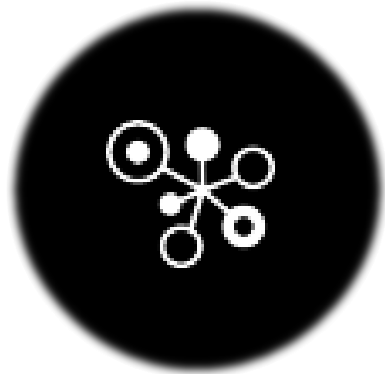


Optimizers

ProtecTIER Deduplication
Real-Time Compression
SAN Volume Controller
Easy Tier

Underpinned by continuous investment and innovation

IBM investments in capabilities that unlock vast potential of data



Analytics

Largest commercial math department

\$12B since 2005 on 20 acquisitions

IBM Smart Analytics System-all platforms

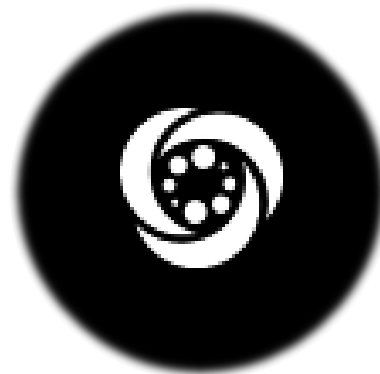


Encryption

Tivoli Key Lifecycle Manager

IBM Institute for Advanced Security

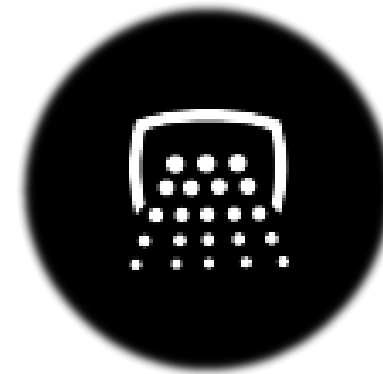
Homomorphic encryption



Compression

Real-time data compression from Storwize acquisition

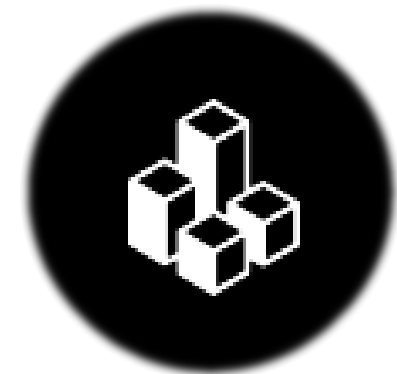
Deep Compression for DB2



De-duplication

ProtecTIER from Diligent acquisition

HyperFactor algorithms and in-line processing



Archive

Intelligent Archive integrated system appliance

Global Archive Solutions Center

Storage-related acquisitions: 2007 Softek, Princeton Softech and Novus Consulting Group
2008 XIV, FilesX and Diligent
2010 Storwize Inc. and Blade Network Technologies

A set of essential technologies enables storage efficiency



Store less data

- Data Compression
- Data Deduplication



Move data to the right place

- Automated Tiering
- Automated Data Migration



Store more with what's on the floor

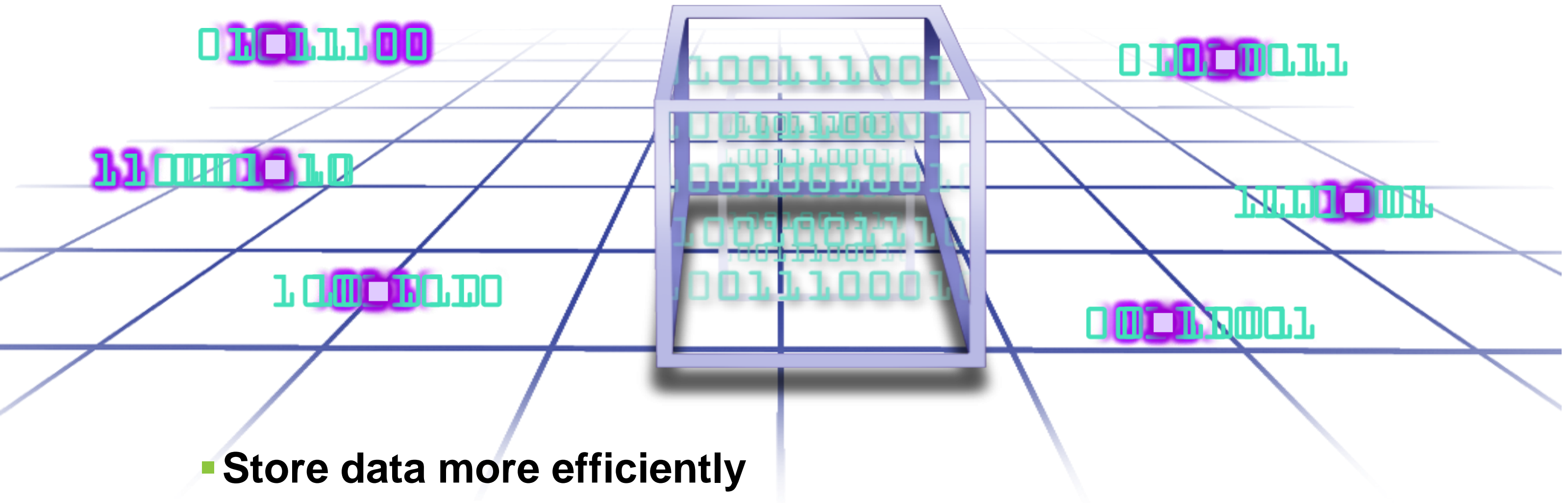
- Storage Virtualization
- Thin Provisioning



Store less data

Compression and Deduplication use less physical storage

IBM ProtecTIER and IBM Real-time Compression appliances



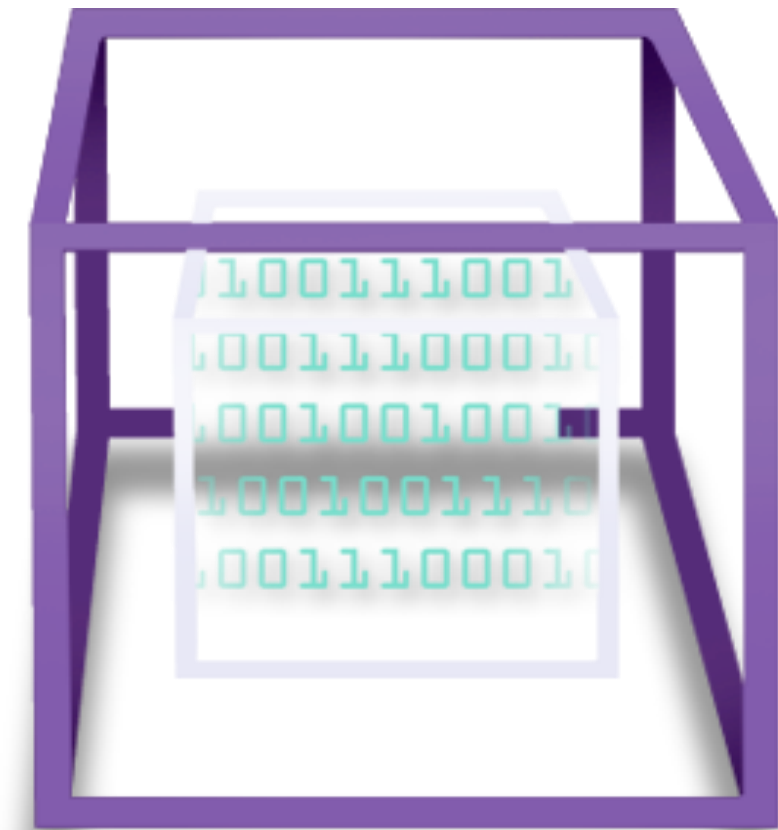
- Store data more efficiently
- Lower Operating Expenses: Power, cooling, floor space
- Keep more data online for better analytics and fast restores
- Make better decisions – *faster*



Store less data

IBM Real-time Compression Appliances shrink active data

- Shrinks active data up to **80%** without degrading performance
- The **only** compression solution on the market that supports **active data**
- **Improve performance** of I/O-bound applications
- Helps keep more data online for **improved analytics and decision making**



New! IBM Real-time Compression Appliances

- 35 Patents granted or pending
- Heterogeneous NAS target support



Store less data

IBM ProtecTIER Deduplication optimizes backups and restores

- Unmatched Efficiency:

Shrink backup data on disk up to **25 to 1**

- Unmatched Performance:

1000MB/sec

New!

IBM ProtecTIER™ TS7610 Appliance
priced and packaged for mid-sized
environments



*“Our **backup window shrank immediately.**
Now, the typical restore request takes five
minutes.”*

FOXCHASE
CANCER CENTER

Karl Barth,
Director of Systems
and Operations

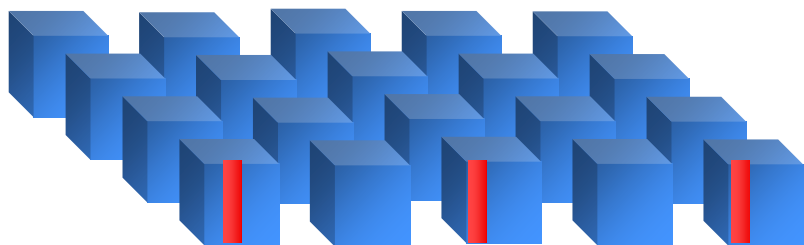
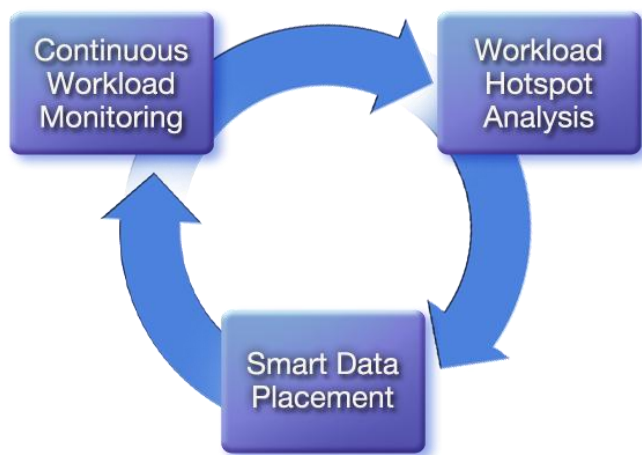


Move data to the right place

IBM Easy Tier automated storage tiering



Solid-State Storage



Hard Disks



70% of data
hasn't been accessed
in **90 days** or more

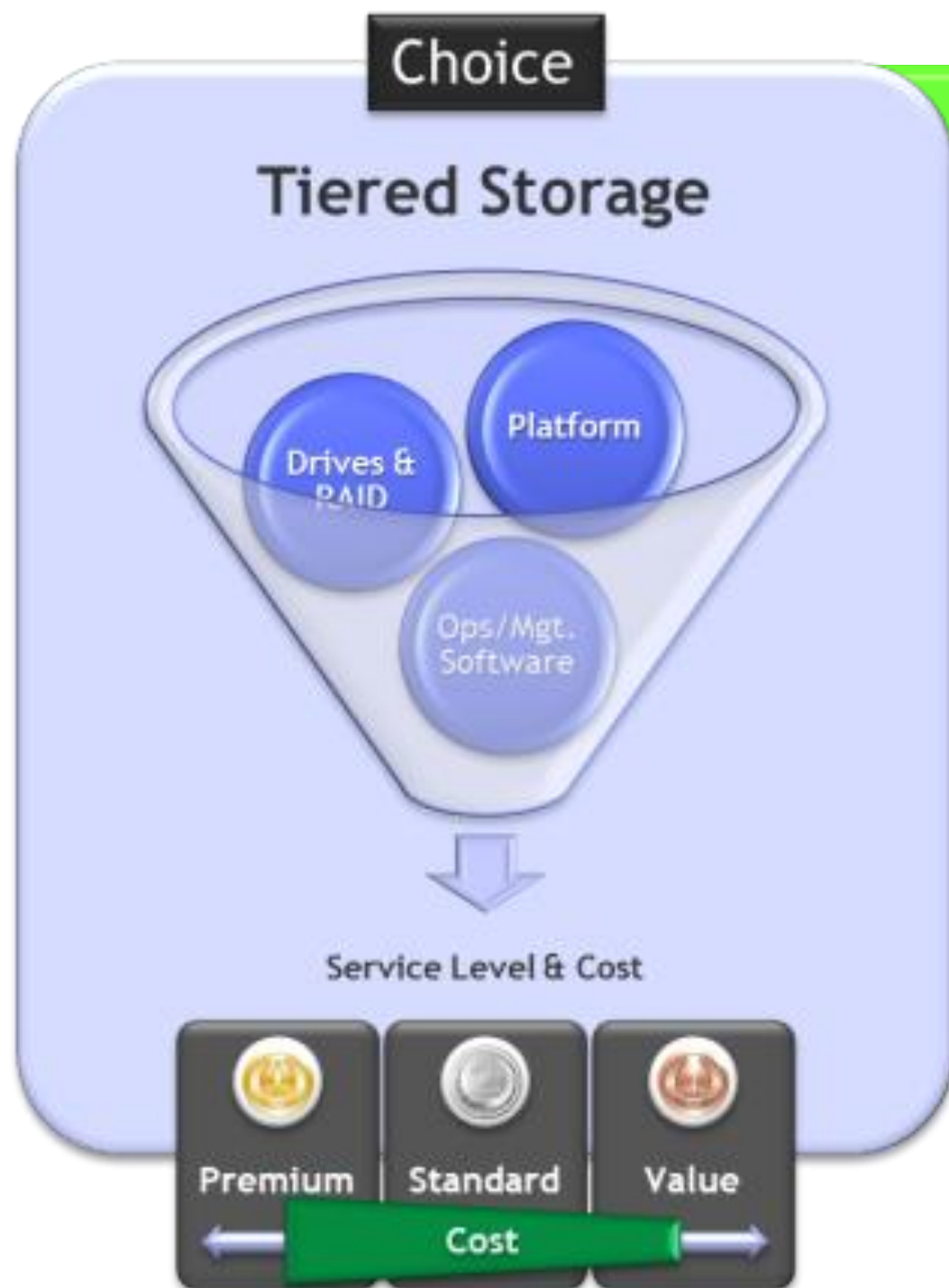
Improve performance up to **3x**
... using as little as **2%**
solid-state storage*

* Audited Storage Performance Council benchmark



Move data to the right place

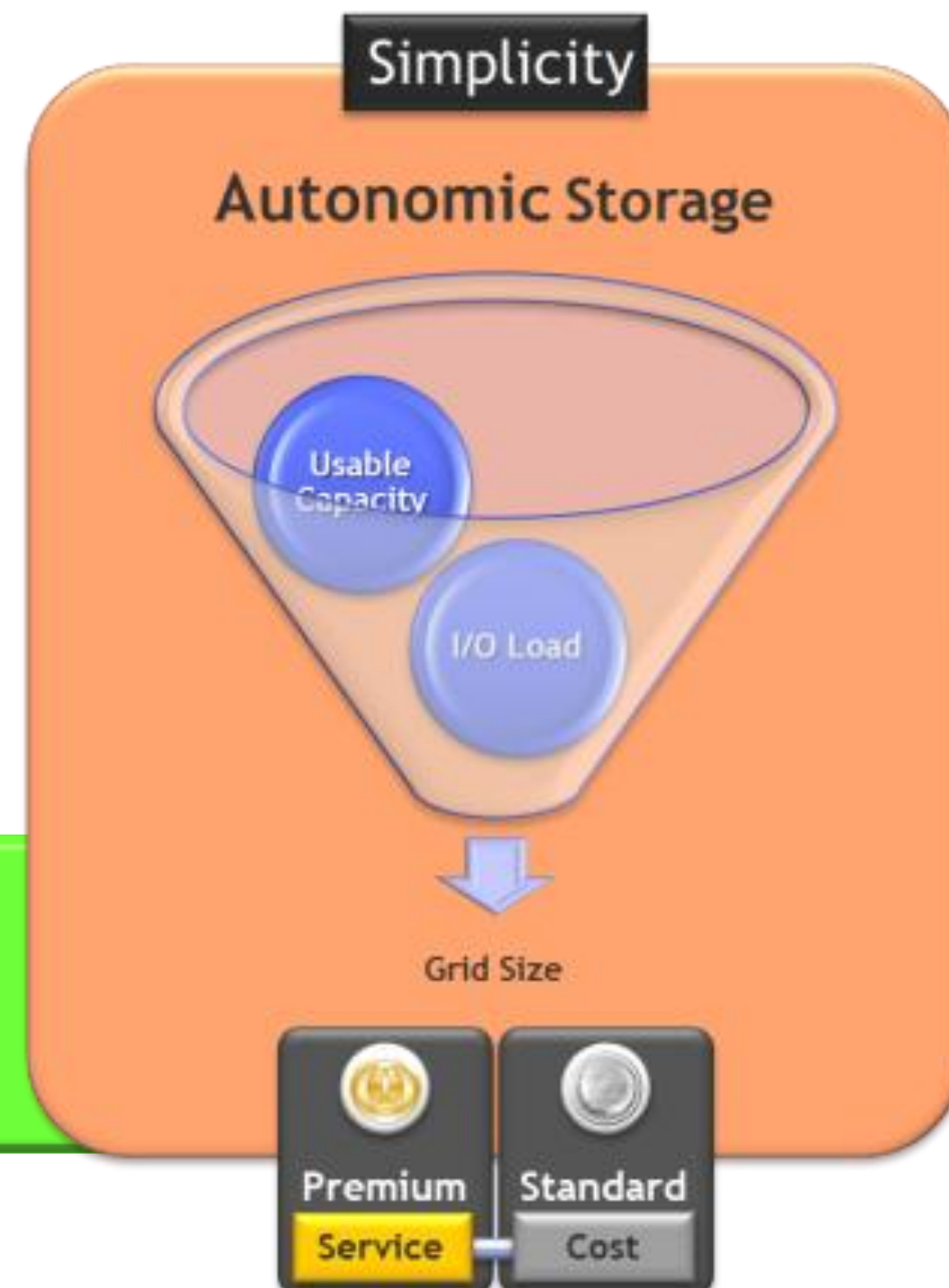
Tiered and autonomic grid storage – smart and flexible



- SSD utilization
- EasyTier
- Ultra high performance
- Mainframe connectivity

**Adaptive storage solutions
for any size organization –
enterprise functionality
from entry level to high end**

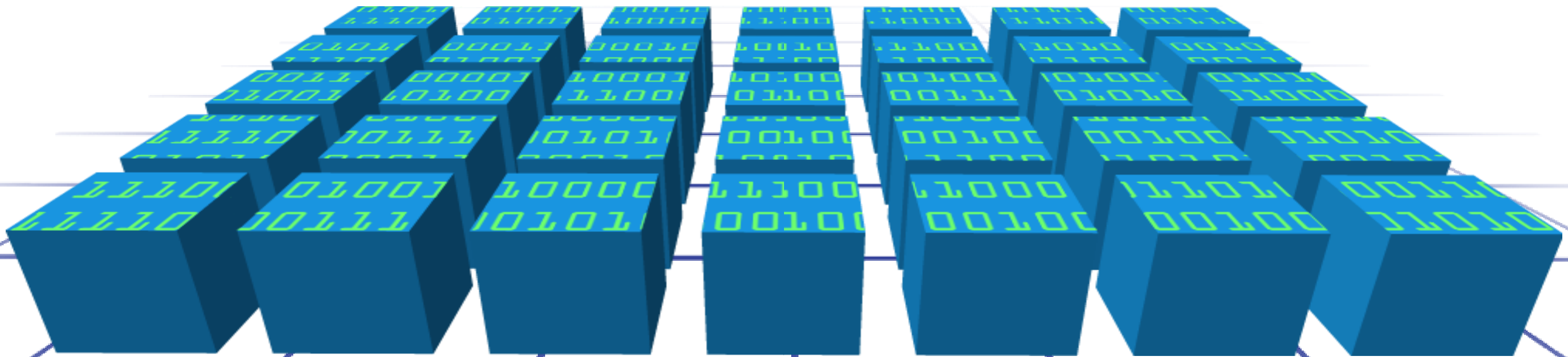
- Automated placement
- No hot spots
- Rapid provisioning
- High performance density





Move data to the right place

Increased storage efficiency demands availability.



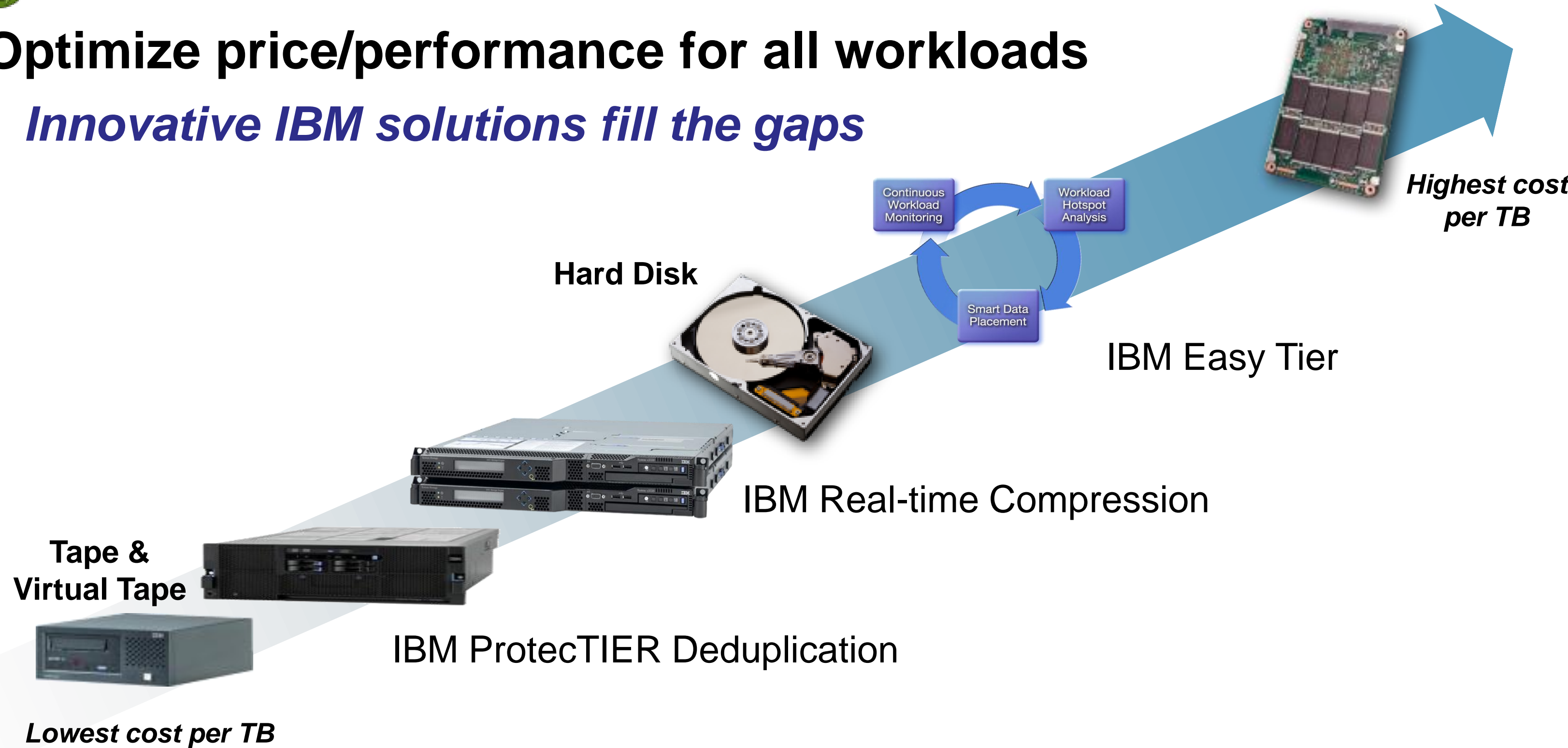
- Increase the availability of your data
- Ensure data recovery in your data centers
- Optimize operational efficiency



Move data to the right place

Optimize price/performance for all workloads

Innovative IBM solutions fill the gaps





Move data to the right place

Optimize price/performance for all workloads

IBM pre-integrated solutions can reduce costs

- Data migration between tiers
- Automated and policy driven

Hard Disk



Solid-state
storage



*Highest cost
per TB*

Tape &
Virtual Tape



Lowest cost per TB



IBM Information Archive



IBM Scale-out NAS

Intelligent archive agents

- Optim Data Growth Solution for databases and enterprise applications
- IBM Content Collector for Email

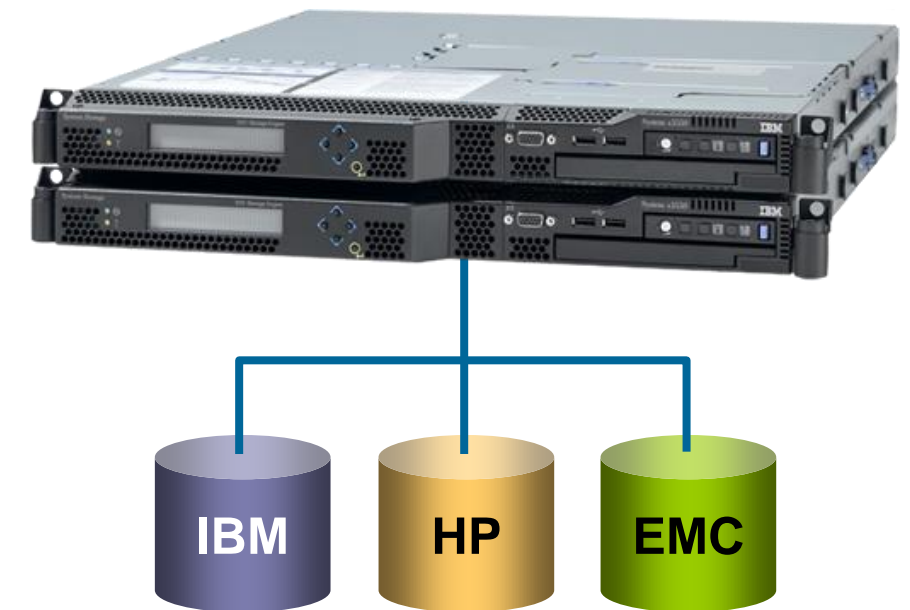


Store more with what's on the floor

IBM builds virtualization into the storage infrastructure

- Improve utilization up to **30%** by pooling storage
- Extend advanced functionality to your existing storage
- Online data migration – virtually eliminate application downtime
- Investment protection

IBM SAN Volume Controller



“As a managed service provider, we can take advantage of the IBM System Storage SAN Volume Controller’s ability to cater to each customer’s requirements individually, according to SLAs”



Markus Peltz, Configuration Manager, IDS Scheer



Store more with what's on the floor

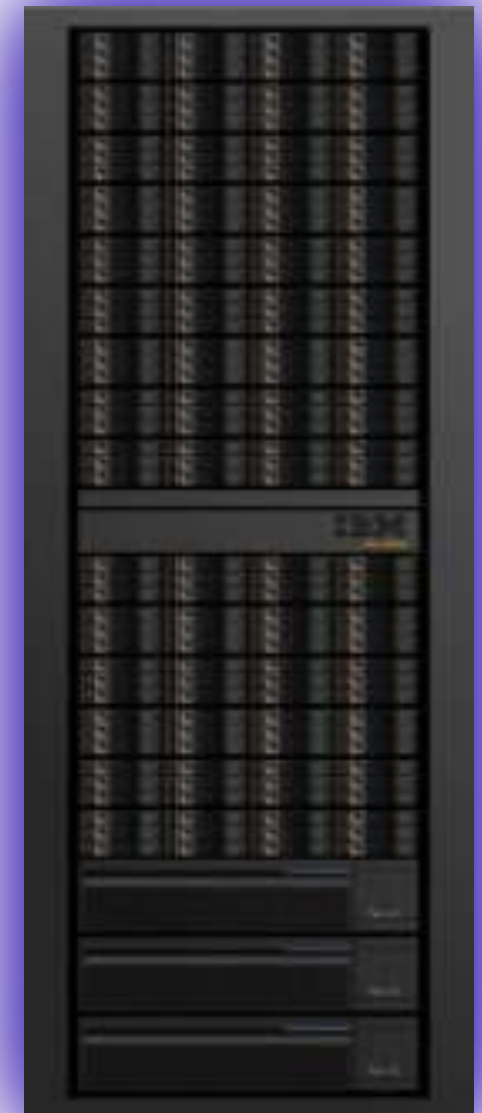
IBM XIV builds virtualization into the storage system

- Performance scales with capacity
- Automated data placement – no tuning, no hot spots
- Designed to perform well at **>90%** capacity
- Up to **63% lower 3-year TCO**

*“If we need to add a new application, we can provision the storage very easily without worrying about the technical side of things. That's really the ‘**wow factor**’...”*



Uli Müller
IT Director
EURONICS Deutschland eG



**IBM XIV™
Storage System**

Available for the first time in a midrange offering...

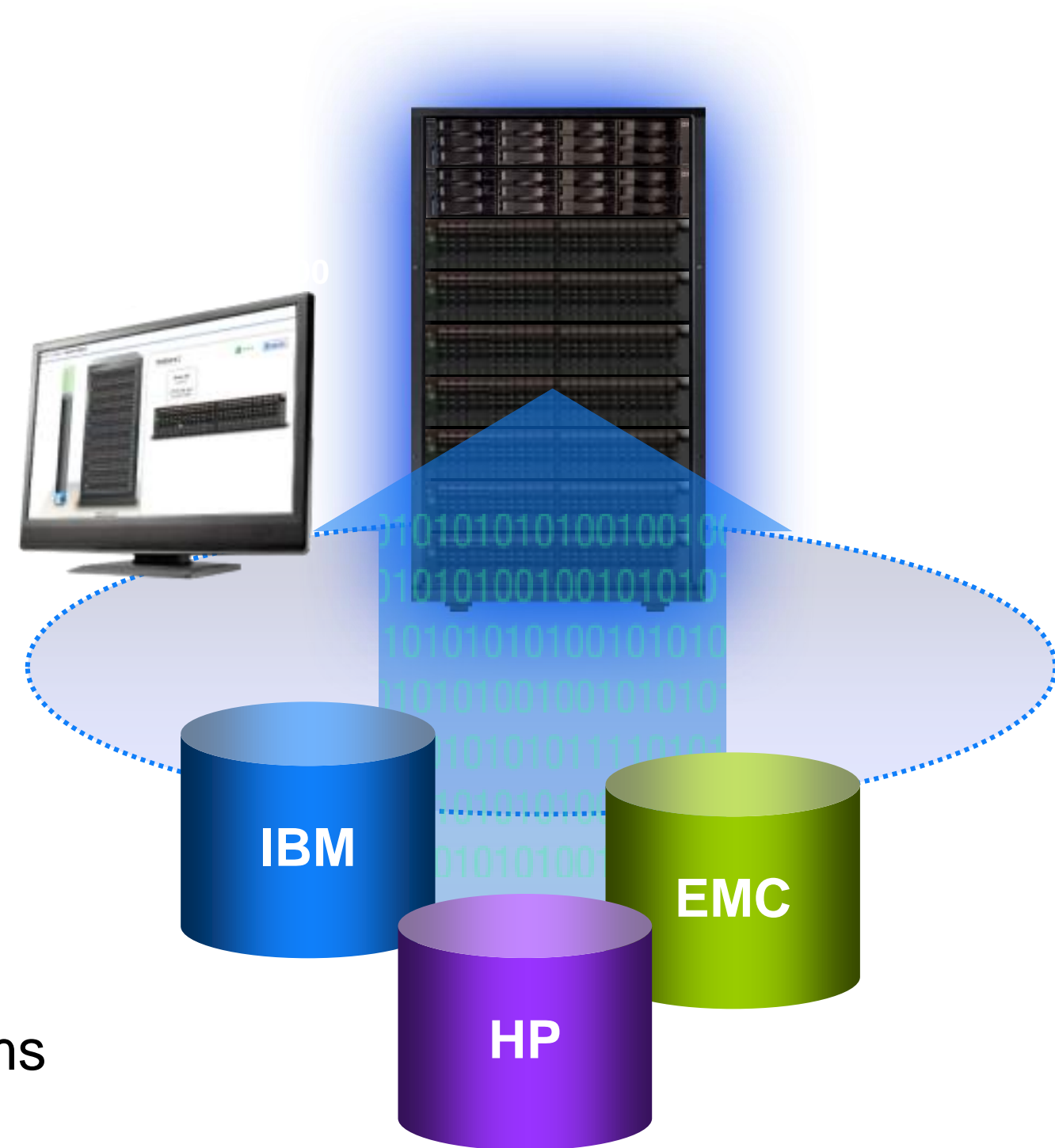


IBM Storwize V7000

- 1 Storage Virtualization**
- 2 Incredible Ease of Use**
- 3 Easy Tier**

Storwize V7000 Brings New Life to Existing Storage Systems

- External storage systems become part of the Storwize V7000 “pool” of storage
- Reclaim space easily with **thin provisioning**
- **Increased performance** with IBM Easy Tier
- Simplify management
 - Single advanced **Graphical User Interface**
 - Tivoli **Integrated Service Management**
- More flexible data protection:
 - **Snapshots** on different storage tiers
 - **Remote mirroring** between different types of systems



Introducing IBM Storwize Rapid Application Storage

Solution Implementation Services

IBM GTS or BP provided

Faster deployment of solution while minimizing impact on applications and administration staff

Tivoli Storage Productivity Center

For Disk Midrange Edition

Performance monitoring, measurement, analysis and reporting

Tivoli Storage FlashCopy Manager

Minimize or eliminate application downtime for near instantaneous backup and restore of critical data



IBM Storwize V7000

Improve storage efficiency with breakthrough ease of use and advanced efficiency technologies like Easy Tier, and storage virtualization

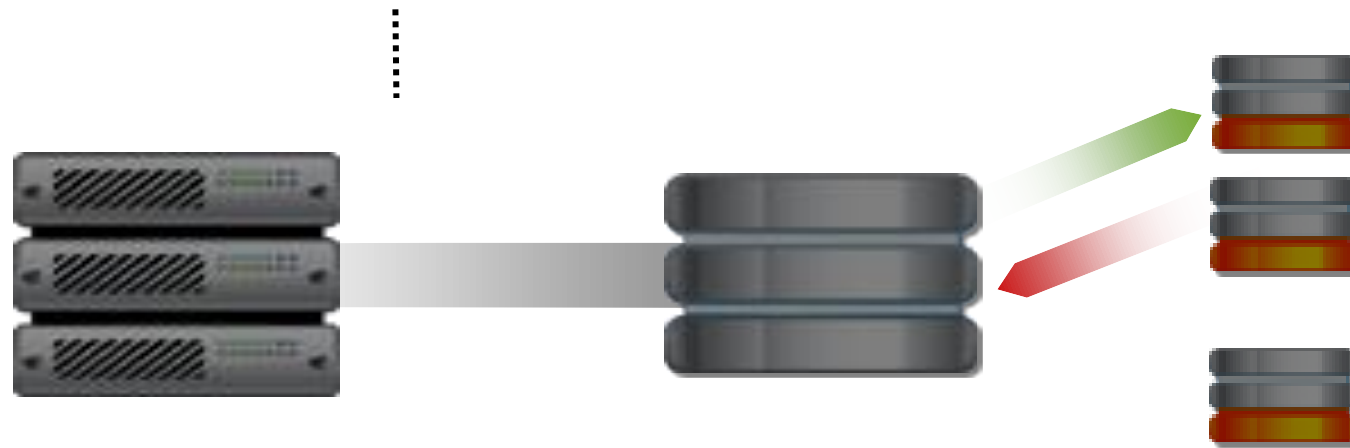
3 Year Maintenance on HW/SW

Consistent, 3-year support for the entire solution – HW & SW

Increase Application Availability

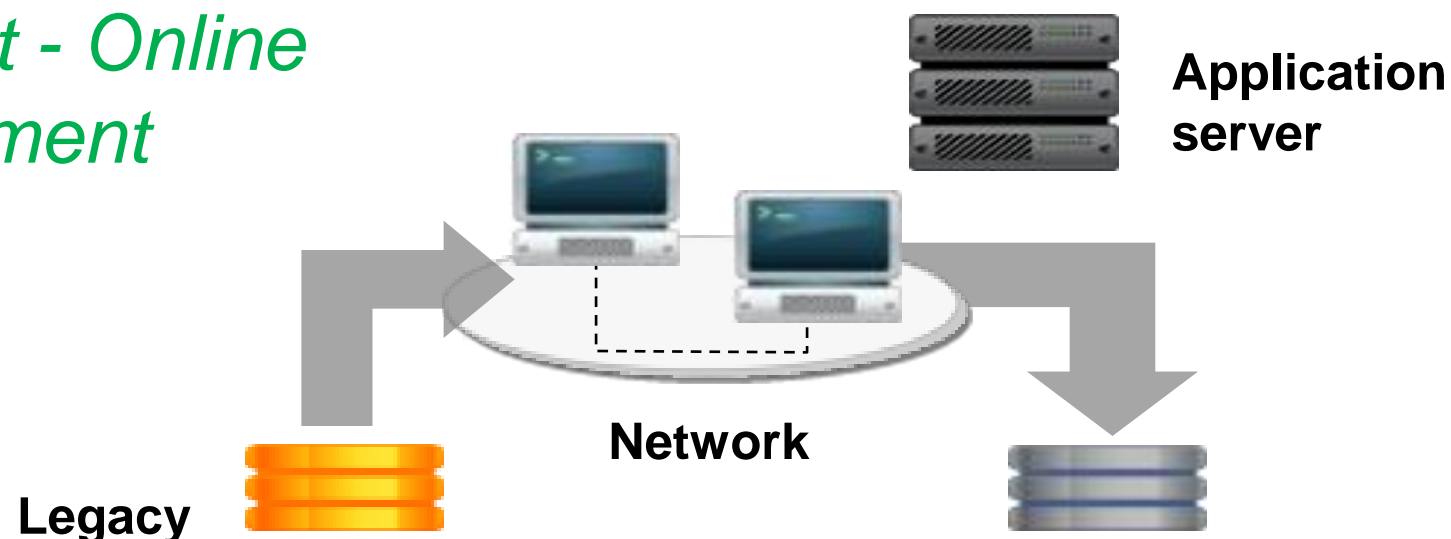
- Would you like to shorten your backup windows?
- Are you confident you can restore your data quickly if necessary?
- Do you know how much data would have to be recreated after a data restore operation?

Application Aware Backups



- Integrated, instant copy virtually eliminates backup windows
- Rapidly create clones for application testing
- View inventory of application copies and instantly restore
- Improve data protection by 95% with hourly backups

Transparent - Online Data Movement



- Transparently move application data from legacy disk arrays to the new system
- Reduce migration elapsed time from weeks or months to days

IBM Tivoli Storage Productivity Center

For Storwize Rapid Application Storage

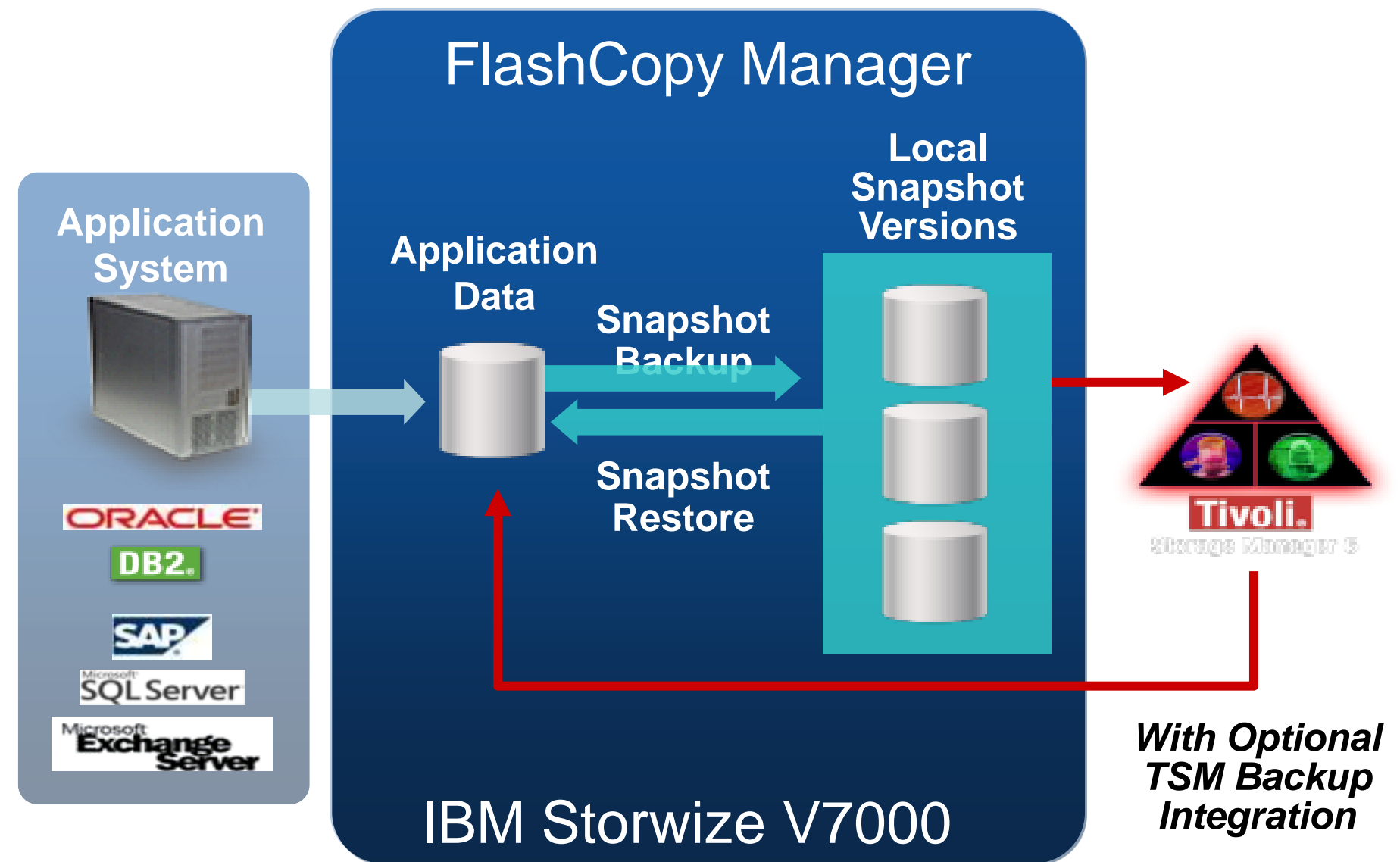
Features

Benefits

Central console and topology viewer	Designed to increase the efficiency of storage Administrators by reducing the number of tools required
Manage IBM Storage and other storage devices with a single suite	Extensive operational control, asset and capacity management, and performance reporting for the latest IBM storage devices
Comprehensive enterprise reporting of all key storage infrastructure parameters	View and understand performance, capacity, utilization and availability metrics for your entire storage infrastructure from a single interface. Set and receive alerts for threshold levels on a wide range of parameters
Automatic SAN device discovery	Simplify the analysis of multiple aspects of the storage environment, including capacity, utilization, assets and availability
Performance Management	Designed to make it easy to analyze, report and trend on performance
Storage Resource Agent	Asset data and capacity data collection from servers without resident agents. Improves performance and supports end to end provisioning, thus significantly improving time to value

IBM Tivoli Storage FlashCopy Manager *For Storwize Rapid Application Storage*

- Online, near instant snapshot backups and near instant restore
- Simplifies deployment and management of advanced, application-aware data protection for IBM storage systems
- Improves backup and recovery times from hours to a few minutes
- Improves productivity by simplifying management and automating routine administrative tasks
- Leverages existing investments in IBM storage systems
- Integrated with IBM Storage Hardware



IBM Storwize Rapid Application Storage

A Storage Solution Designed to...

- Increase storage utilization
 - Improve disk utilization by up to **30% or more**
 - Reduce amount of storage required for snapshots by **75% or more**
- Increase storage administrator productivity
 - Improve administrator productivity **up to 2 times**
- Increase application performance
 - Application throughput improved **up to 3 times, up to 60%** improved response time
- Increase application availability
 - Migrate data with minimal application downtime



IBM Helps You Improve Storage Efficiency at Every Level

Store less data

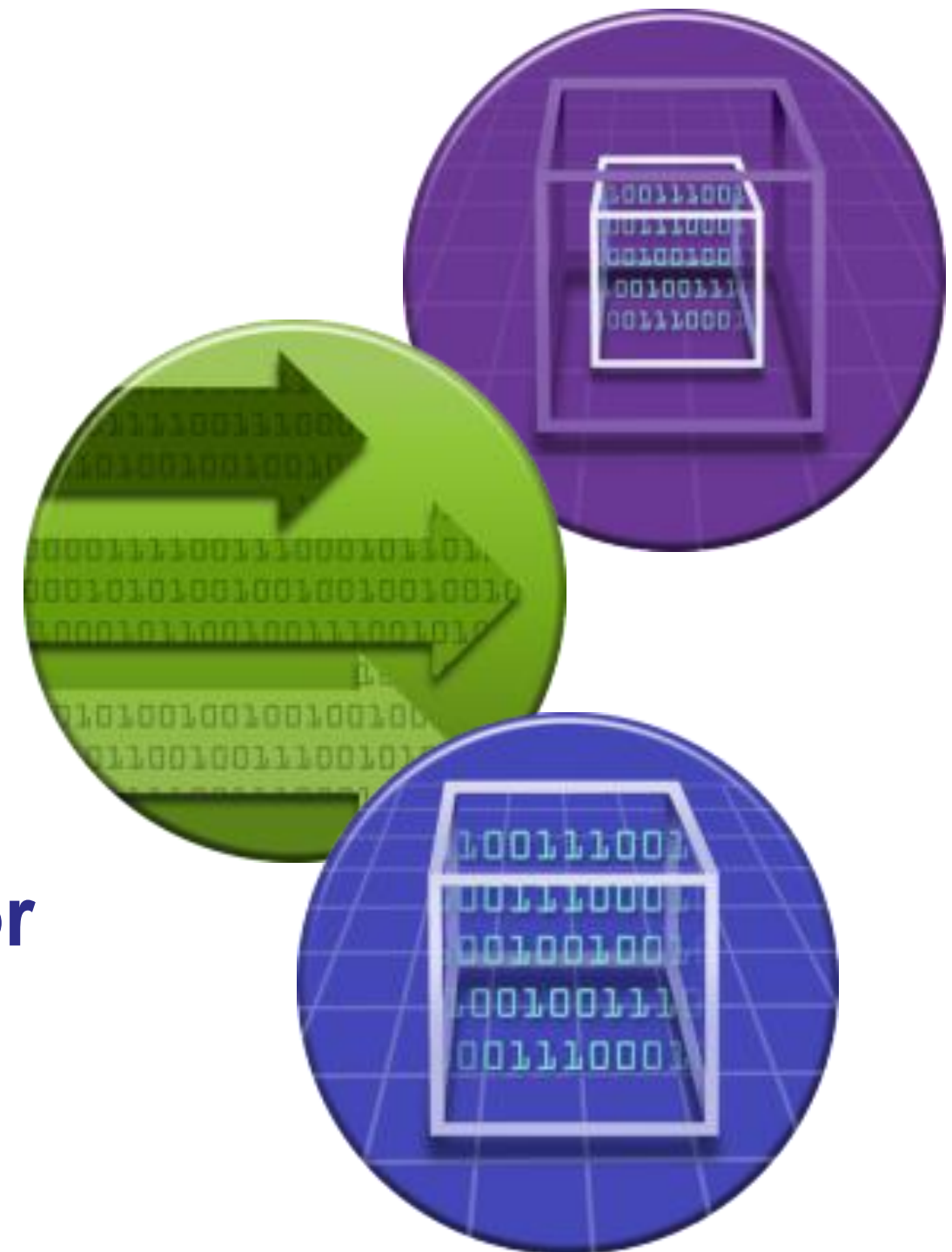
- Data Compression
- Data Deduplication

Move data to the right place

- Automated Tiering
- Automated Data Migration

Store more with what you have on the floor

- Storage Virtualization
- Thin Provisioning



Call to action

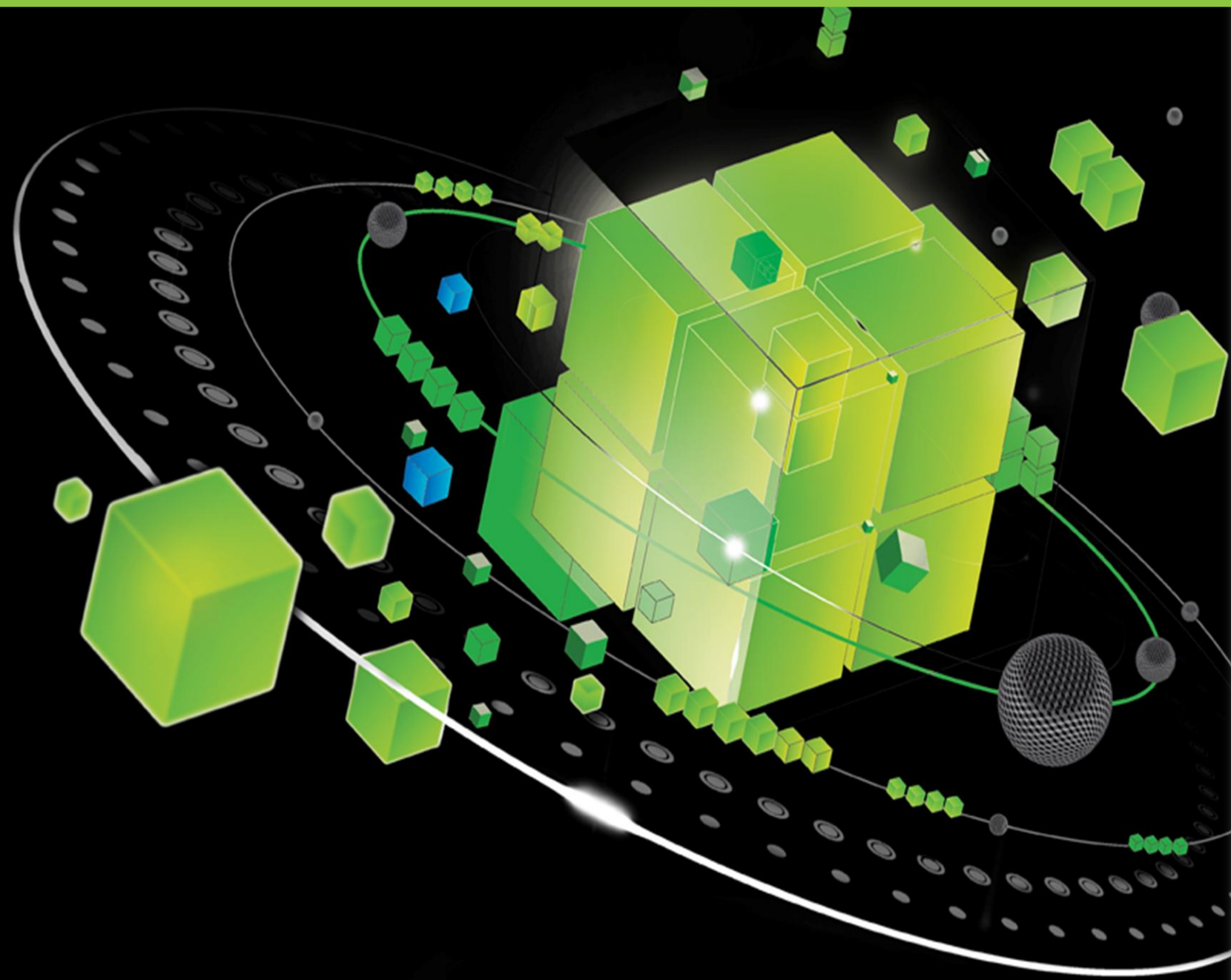
- Engage your IBM business partner or IBM seller to request a Storage Efficiency Analysis
 - The Storage Efficiency Analysis is an assessment of a client's networked storage environment with the objective to identify opportunities to reduce the future overall storage requirements, reduce complexity and costs.
 - By analyzing your current storage environment we will identify optimization opportunities that result in long term reduction of storage, power and staffing costs.
 - The output of the study includes a recommended solution and complete financial business case to justify the recommendation.
 - Time to complete the analysis is typically just six to ten business days from project kickoff!



IBM Storage

Customer Experience

Proven Solutions,
Real Value



IBM's own experience: IBM cut block storage costs by 50%

IBM increased storage utilization
from **50%** up to **90%**

... with storage virtualization,
thin provisioning, and pooling

Storage efficiency is about making money, not just saving

Oil and gas companies can **analyze up to 2X more information** online than competitors who have to wait for data to come off of tapes ...

... using Landmark Petrostor®
powered by IBM Real-time
Compression Appliances

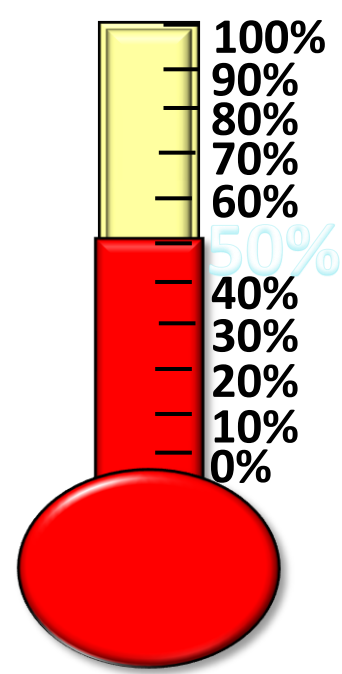
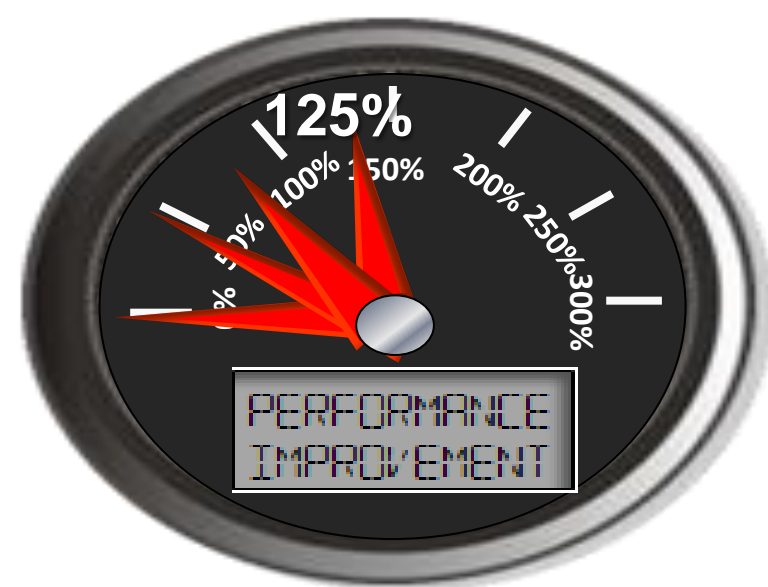


Industry Specific View – Energy and Utilities

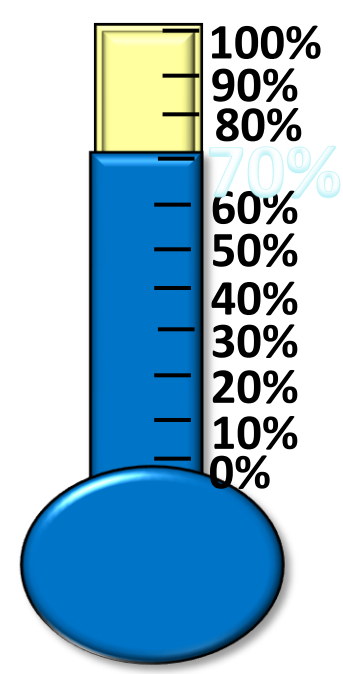
SAP Metering Application

“Linked with SAP CRM, we will be able to manage connections, usage and billing more efficiently, handling a larger number of customers within the same administrative overhead.”

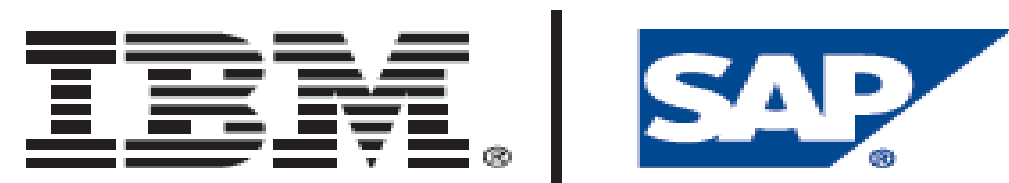
**Keith Broad, Director
Information Technology
Bluewater Power**



CAPEX REDUCTION



OPEX REDUCTION



Advanced Analytics

New analytics system has “*set a new bar*” and delivers “*unparalleled performance*”

“This advanced grid platform is giving us unparalleled performance...we have to score a particular portfolio of 400,000 loans with our suite of models, using multiple scenarios, and we need to run it over the 360 months of the mortgages’ life. That process used to take three hours, now it takes 10 minutes because of the parallelization capabilities of the grid. The ability to go from three hours to 10 minutes on a job demonstrates a tremendous increase in our ability to deliver information and make decisions.”

Stephen Lange
Managing Director
Corporate Investments Group
Bank of America

Bank of America 



**Four days
to four hours**

Read the whole story [here!](#)

Messaging: Microsoft Exchange on IBM Storage

"Simply Outstanding... Sensational..."

"XIV was subjected to a battery of stress test exercises that simply COULD NOT be performed on other enterprise storage platforms. XIV's ability to extend resiliency while maintaining performance extends far beyond the breaking point of other enterprise arrays"



3X



Read the whole story [here!](#)

Thank You

IBMersValue



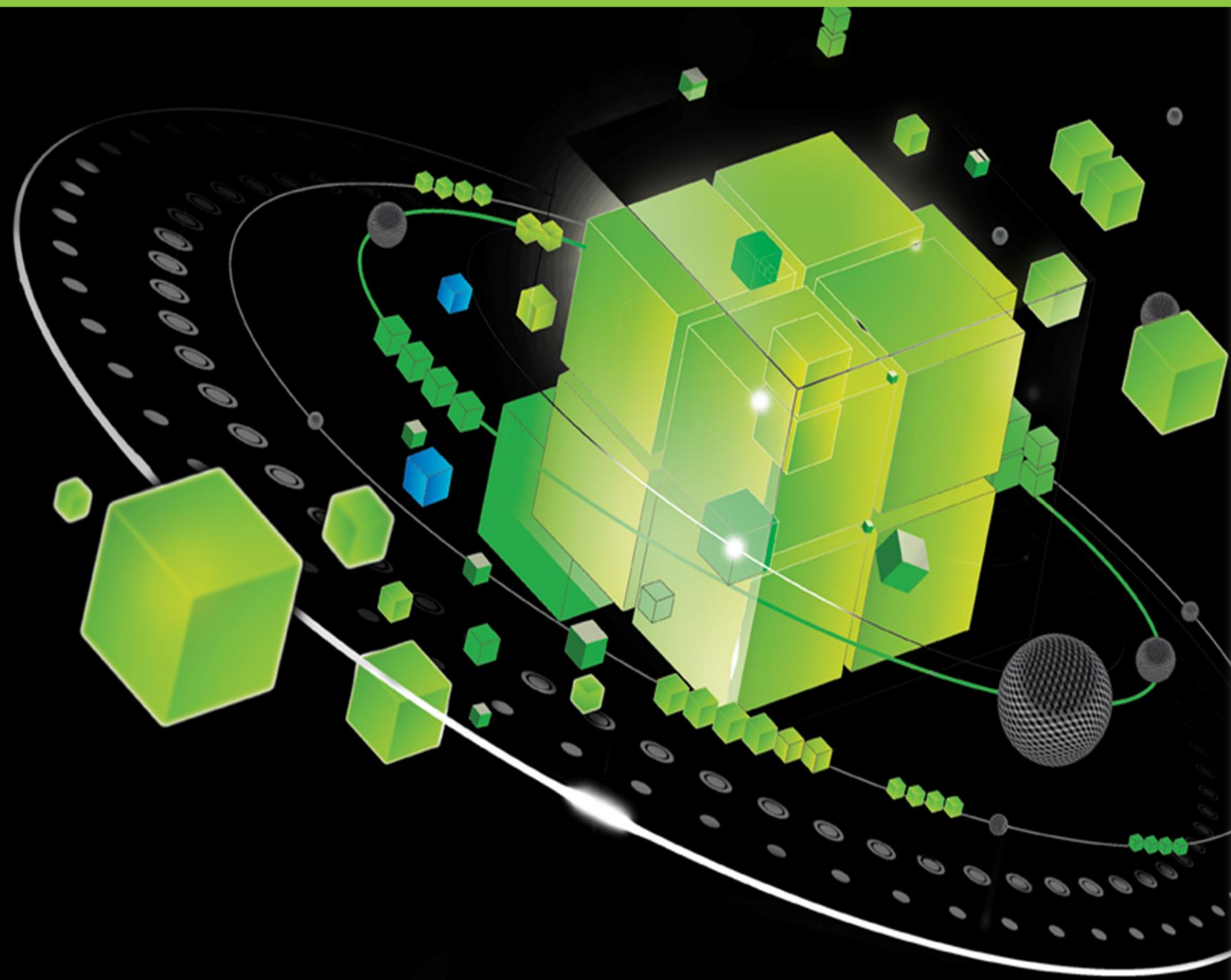
Dedication to every client's success.

Innovation that matters—for our company and for the world.

Trust and personal responsibility in all relationships.

IBM Storage

BACKUP SLIDES





Store more with what's on the floor

IBM Storwize V7000

A new era in midrange storage has begun...

- **Modular** midrange storage that grows as your needs grow
- **High performance** storage that is **Easy** to set up and manage
- **Advanced** storage efficiency and data protection capabilities built in



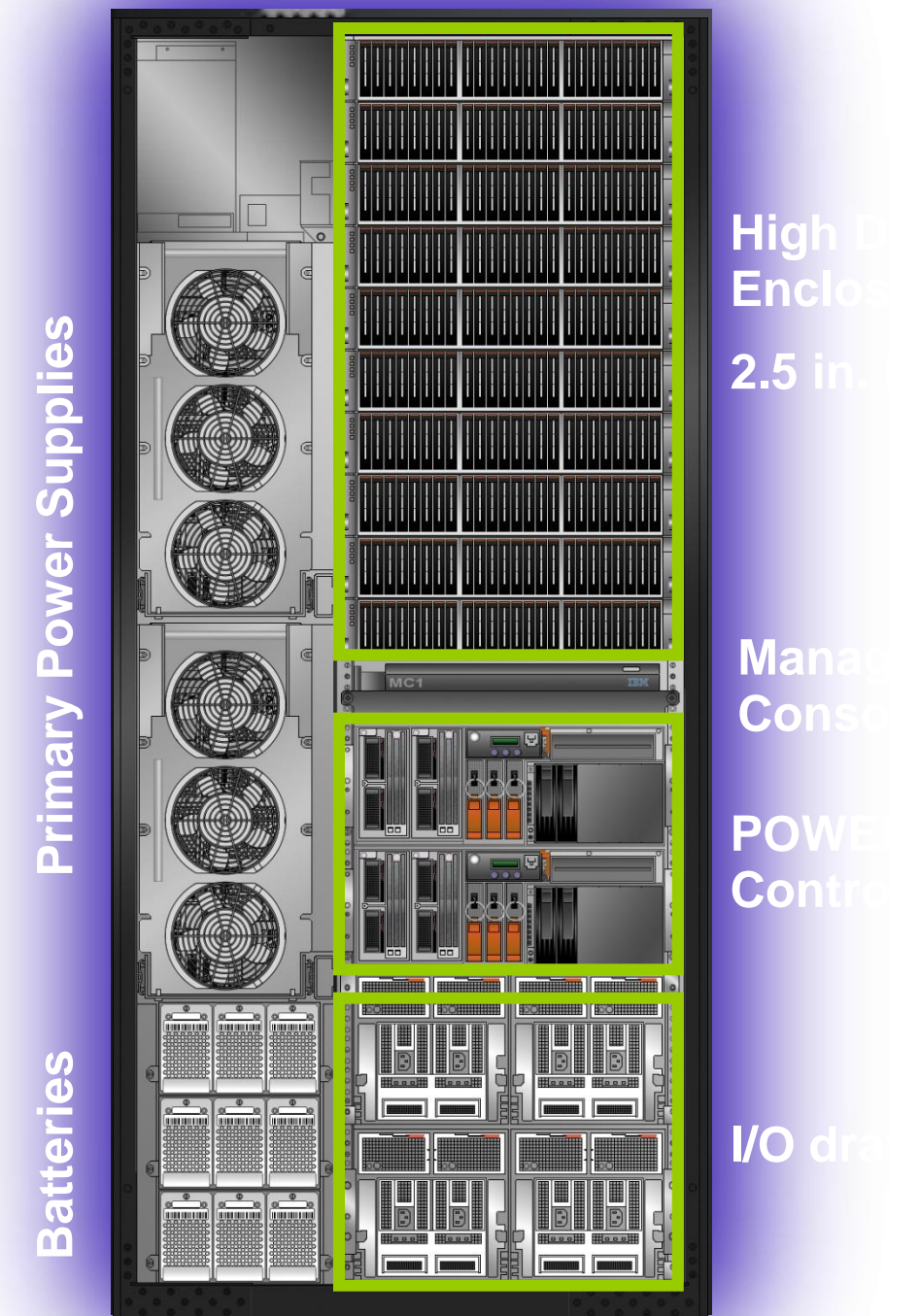


Store more with what's on the floor

IBM System Storage™ DS8800

- Up to **40% better performance**
- Save floor space with nearly **twice the drive density**
- Reduce costs with up to **36% less energy consumed**

Host over 1,000 drives on up to 40% less floor space than IBM DS8700 with 3.5 in. disks



Front view
(cover removed)