

Thinking beyond Today

*Optimize your Information Infrastructure
with Smarter IBM Storage Solutions*

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Why Information Infrastructure

Today, information has become the lifeline for business sustainability and competitive advantage. Firms of all size are searching for practical ways to create business value – to get their arms around information, correlate insights and to confidently predict outcomes and take action.

For CIOs, the information era poses unique challenges: how to cost-effectively store, archive and retrieve a virtual explosion of new information, how to protect and secure that information, meet compliance requirements and make it accessible for business insight, where and when it's needed.

Without a dynamic information infrastructure, organizations will find themselves facing higher operational costs and greater exposure to business risks.

To help our clients, IBM is addressing these challenges with Information Infrastructure solutions for efficiently managing information growth, supporting compliance, reducing storage and archiving costs and enabling continuous access to information in support business requirements.

The Information Challenge

Enterprise data is exploding (57%CGR), businesses are under pressure to cost efficiently store, protect and manage it

*Cost Efficiencies
Globalization
Risk & Compliance
Mergers & Acquisitions*

- Many industries require data to be retained more than 50 years
- 80% of this data is now unstructured email, images, videos, documents
- Disruptions from downtime can cost up to 16% of a firm's total revenue

*Volume Explosion
Unstructured Data
Multiple Versions
Inaccessible, Untimely*

Data Volume

By 2010, the codified information base of the world is expected to double every 11 hours. Data is exploding, & its nature is changing to machine-generated – from sensors, RFID, meters, GPS systems & more

Data Variety

With the expansion of information comes large variances in the complexion of the available data – 80% of data is now unstructured, contributed largely by email, documents, images and video



Data Risk

With more than 30 new compliance regulations worldwide, the amount of data that is subject to regulation is growing at 64% per year. More than 60% of IT executives now rate compliance with regulations a top challenge

Data Retention

Many industries require certain data to be stored for more than 50 years. But on average 37% of a firm's data is inactive or expired. Storing and archiving this data unnecessarily increases business risk, energy consumption and IT costs

Key Capabilities for Successfully Managing Information

An Information Infrastructure Must Address...



Information Availability

Deliver continuous and reliable access to information

Downtime costs can amount up to 16% of revenue in some industries.



Information Security

Protect and enable secure sharing of information

84% of security breaches come from internal sources.



Information Retention

Support your information retention policies

37% of data is expired or inactive
83% surveyed keep some data 50 years or more



Information Compliance

Reduce reputation risks and audit deficiencies

Average US legal discovery request can cost organizations from \$150k to \$250k.

IBM Information Infrastructure Solutions

Innovative, Integrated, Available Today

IBM and its business partners bring an innovative approach to enable clients to **manage information more effectively and mitigate information risks with a dynamic infrastructure** that efficiently and securely stores, protects and optimizes access to information

Our clients can protect, manage and gain insight from their information with our leading-edge storage and data management products, services and integrated solutions supported by world-class expertise and proven experience

Information Compliance



Mitigate information risks

Information Availability



Deliver continuous access to information

Information Retention



Support information retention policies

Information Security



Securely share information

What is IBM Information Infrastructure?

The Power of Integrated Solutions and Industry Expertise

IBM brings together a breadth of Information Infrastructure capability to address our client's information management needs, providing a foundation for firms of any size to **efficiently and effectively manage information** so they can unlock its business value, create new insights and confidently take action



Storage and Servers



Software

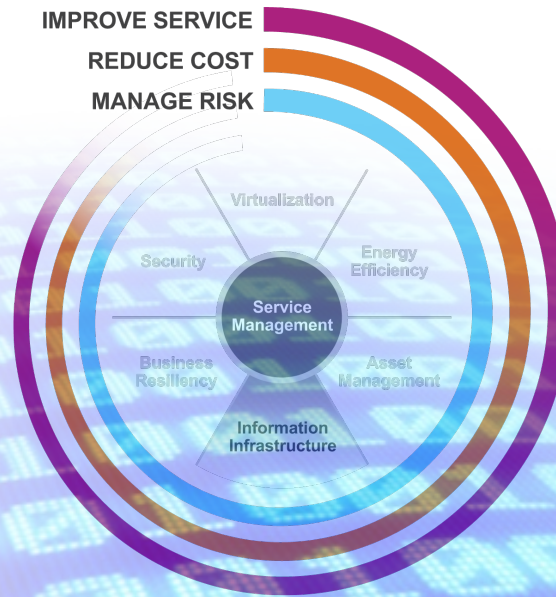


Services

- Efficiently store, archive and protect information
- Make information accessible and available to the business where and when its needed
- Support business compliance, energy policies and audit requirements

IBM Information Infrastructure Strategy

Technology, Solutions, and Expertise for Data Center Transformation



Technology Leadership

- Best of Breed Products
 - R&D Innovation
 - Acquisitions

Client Focused Solutions

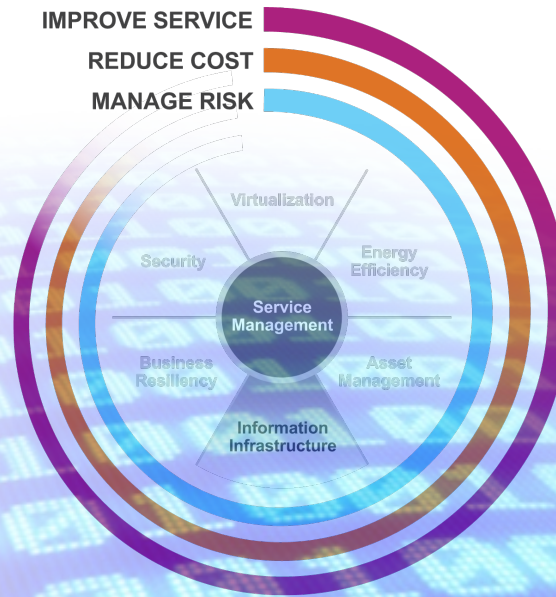
- Purpose Designed
 - Industry Aligned
- Cross IBM Integrated

Expertise & Experience

- Industry Expertise
- Consulting Services
- Experience Based Tools and Methods

IBM is Responding

Technology Leadership to Drive Information Infrastructure Initiatives



Technology Leadership

- Best of Breed Products
 - R&D Innovation
 - Acquisitions

Client Focused Solutions

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- Cross IBM Integrated

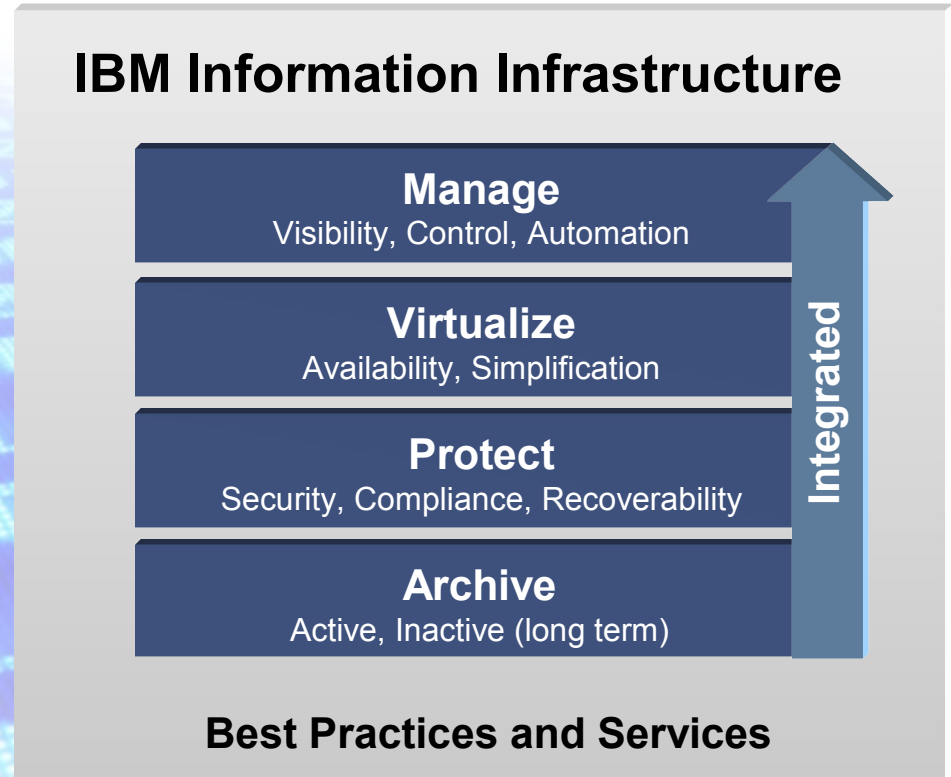
Expertise & Experience

- Industry Expertise
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Breadth of Capability From a Single, Proven Vendor

IBM Information Infrastructure Includes...

- Storage and Security management software
- Disk and Tape systems
- SAN Directors and Switches
- Integrated business solutions
- Expert storage consulting
- Deep and proven industry experience
- Flexible financing



Acquisition Leadership Strategy

*Bringing Great People and Technologies into the IBM Family;
Helping Clients Enhance Core Capabilities*



Information Availability

Deliver continuous and reliable access to information

- **XIV** – High performance, scalable grid-based storage systems, 1/08
- **Novus** - storage analysis and reporting software and services, 10/07
- **Softek** - Data mobility technology and best practices consulting, 3/07



Information Security

Protect and enable secure sharing of information

- **Encentuate** - Enterprise single sign-on and authentication, 3/08
- **Watchfire** - Web application vulnerability assessment and compliance solutions, 7/07
- **Internet Security Systems** - Preemptive enterprise security, 10/06



Information Retention

Support your information retention policies

- **Diligent** – In-line data de-duplication, 4/08
- **FilesX** - Continuous data protection and rapid recovery, 4/08
- **Arsenal** – Managed Services for on-line data protection, 12/07



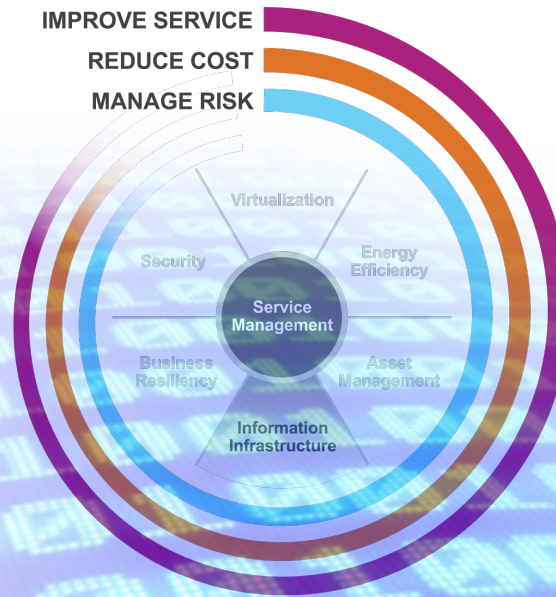
Information Compliance

Reduce reputation risks and audit deficiencies

- **Consul** - Data governance and compliance monitoring, auditing and reporting, 1/07
- **FileNet** - Business process and content management solutions, 10/06

IBM is Responding

Client Centric Solutions with a Faster Time to Value



Technology Leadership

- Best of Breed Products
 - R&D Innovation
 - Acquisitions

Client Focused Solutions

- Purpose Designed
- Industry Aligned
- Cross IBM Integrated

Expertise & Experience

- Industry Expertise
- Consulting Services
- Experience Based Tools and Methods

IBM Information Infrastructure Proven Capabilities

Manage Information Risks



Information Availability

Deliver continuous and reliable access to information

- *Geographically Dispersed Parallel Sysplex (GDPS)*
- *Scale Out File Services (SOFS)*



Information Security

Protect and enable secure sharing of information

- *Encrypted Media, Key Management*
- *zSecure Suite*
- *Tivoli Security Information and Event Manager*



Information Retention

Support your information retention policies

- *Grid Medical Archiving (GMAS)*
- *Virtual Tape System (VTS)*



Information Compliance

Reduce reputation risks and audit deficiencies

- *Compliance Warehouse*
- *Data Retention System (DR550)*

Reducing Total Costs through Energy Efficiency

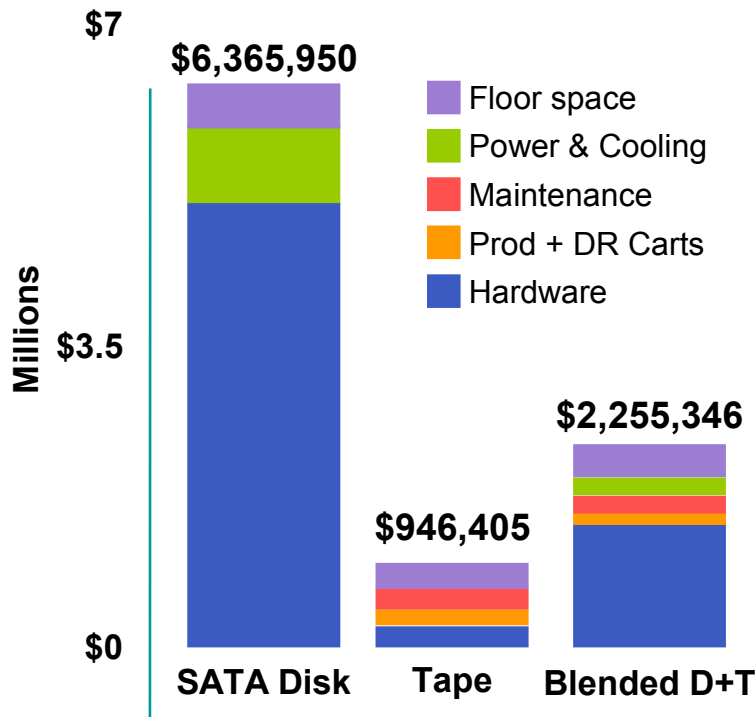
IBM is the Leader in Green Data Center Initiatives

Cut TCO 50% with Blended Tape and Disk*

10 year TCO example. Assumes 250TB of storage, 25% growth per year.

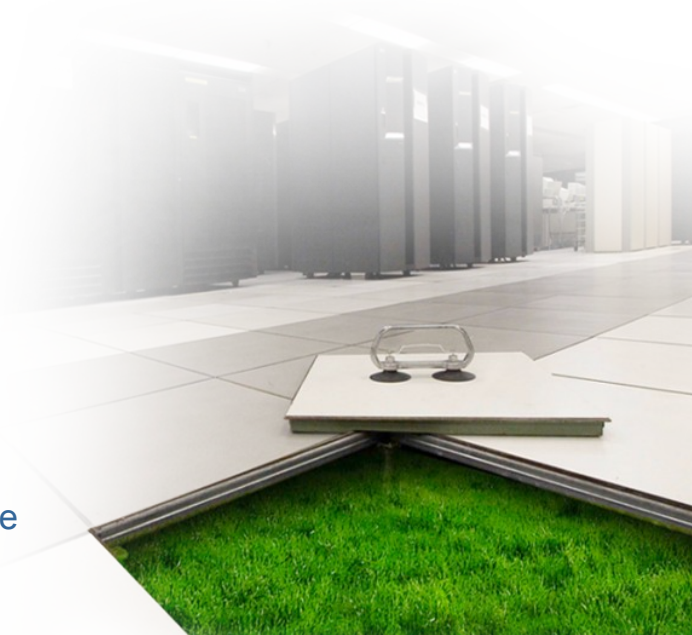
Green Projects for Information Infrastructure Reduce TCO

- Virtualization
- Best Practices
- Technology Refresh
- Tiered Storage
- Storage Consolidation



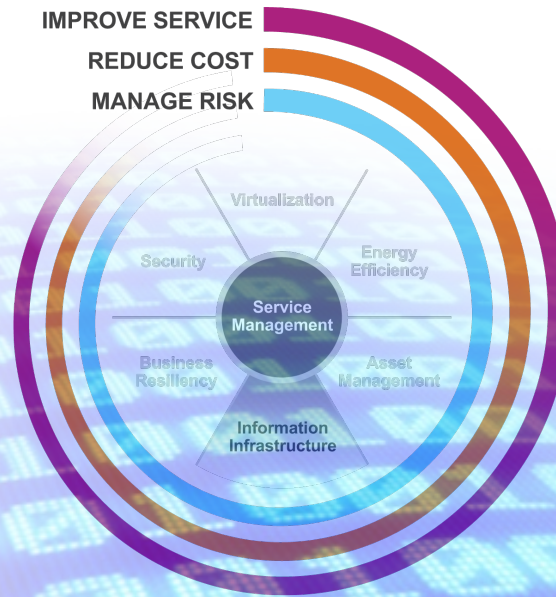
"... tape is still less expensive to acquire and maintain than disk over the long term and it can offer power and cooling efficiencies over disk."

Source: Addressing Archiving and Retention Challenges In the Government Sector, Heidi Biggar and Brian Babineau, Enterprise Strategy Group, March, 2008



IBM Thought leadership

Expertise and Experience for Enabling Client Success



Technology Leadership

- Best of Breed Products
 - R&D Innovation
 - Acquisitions

Client Focused Solutions

- Purpose Designed
 - Industry Aligned
- Cross IBM Integrated

Expertise & Experience

- Industry Expertise
- Consulting Services
- Experience Based Tools and Methods

IBM Expertise and Experience

IBM is a Strategic Partner

- 50+ years in storage business
- IBM System Storage – a \$5-10B business
 - ~5,000 people, 170 countries
 - 1,000+ Business Partners
 - 14 development labs worldwide
 - \$500 million+ in R&D annually
- Patent and Standards leadership
- Industry Partnerships
- More than 2x the size of the nearest Storage Services competitor, based on 2006 worldwide revenue¹



Information Infrastructure Services

Implementation Services; Expert Consulting; Services Products



Information Availability

Deliver continuous and reliable access to information

- *Storage Optimization & Virtualization*
- *Information On Demand*
- *Data Mobility*



Information Security

Protect and enable secure sharing of information

- *Data Security Assessment and Design*
- *Information Protection Assessment*
- *Security Governance*



Information Retention

Support your information retention policies

- *Data Continuity*
- *Resiliency Consulting*
- *Enterprise Archiving*



Information Compliance

Reduce reputation risks and audit deficiencies

- *Activity Compliance Monitoring and Reporting*
- *Regulatory and Standards Compliance*
- *Crisis Management and Response*

Assess * Design * Deploy * Manage

What's New on April 28th?

Reducing the cost of protecting and managing your business information

Data Center Networking

IBM announces Data Center Network (DCN) switches and adapters that support Storage Fibre Channel protocol over Ethernet, and expanded **Converged Data and Storage Network** services; which can help clients quickly **reduce network cards and cables by up to 50%**, simplify management, and create a more dynamic information infrastructure.

Core Information Infrastructure Enhancements

More CARS. IBM continues to expand its Information Infrastructure initiative with new and enhanced products and services. Announcements update IBM's portfolio in Information **C**ompliance, Information **A**vailability, Information **R**etention, and Information **S**ecurity (**CARS**)



Compliance: Updated **FileNet P8 interface to IBM protected Storage**. Expanded GTS **Compliance and Archive practice in China** ahead of Basic Standard (SOX-like) law.



Availability: More **enterprise-class features for XIV**. New **performance management** in TPC 4.1. **More throughput and capacity** for DS5000. New IT Optimization service.



Retention: ProtecTIER adds replication for virtual tape cartridges to **improve disaster recovery**. TSM 6 enhances **SharePoint integration** and HSM for Windows to **improve data protection**



Security: **First to market** drive-level disk **encryption for midrange disk**, DS5000

Data Center Networking is Essential to Dynamic Infrastructures

- Networking plays a pivotal role in a dynamic infrastructure
- A dynamic infrastructure is only as good as its weakest link
- Dynamic infrastructures place new demands on networks
- A comprehensive networking strategy is also critical in accelerating the benefits of cloud computing



New Data Center Network Hardware. Enhanced Software and Services.

New Fibre Channel over Converged Extended Ethernet Switch, Adapters

- 10 Gb capacity and Quality of Service management (System Storage™ DCN32B-1).
Preview, June 23 Announcement.

Four New “Series” of Ethernet Products OEM’d from Brocade

- Two series of modular units for core and aggregation layers (m-series and s-series)
- Two series of Top-of-Rack (TOR) units for access layer (c-series and g-series)
- Both high-function routers (m & c-series) and high-bandwidth switches (s & g-series)

IBM Network Management Software

- New release of IBM Director, version 6.1.1
- IBM Tivoli Network Manager support for new Adapters and Switches

Enhanced Network Services: GTS Integrated Communications Services

- IBM Networking Strategy and Optimization - network Infrastructure optimization for consolidation and virtualization (II, System z, Power, System x) *Enhancements available 5/29*
- IBM Network Integration Services for data center networks – consolidation and virtualization (II, System z, Power, System x). *Enhancements available 5/29*
- IBM Network Integration Services for data center networks - data and storage network convergence (II, System z, Power, System x) *Enhancements available 5/29*

What Differentiates IBM Information Infrastructure Solutions?

Competitive Advantage

Security and Data Services

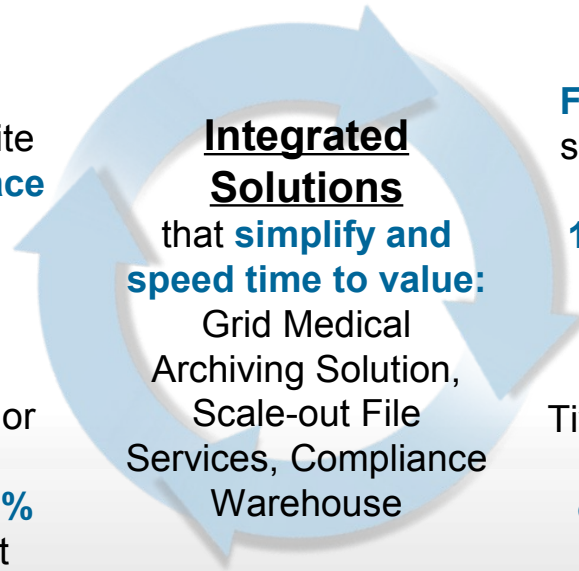
Enhanced Fidelis Security appliances prevent network data loss or leakage with **inspection speeds up to 4x faster than competition**

XIV Storage Systems

Next-gen disk storage simplifies capacity deployment, supports infinite snapshots and **reduces power, space and cooling costs up to 80%**

SVC Storage Virtualization

Virtualize storage across multi-vendor systems, **increase utilization by more than 30% and save up to 50%** in administration and management costs



DS8000 Enterprise Disk

First in market encrypted disk storage simplifies data security and now includes **solid state drives** and more than **1 Petabyte of capacity** per disk system

Tivoli Storage Management

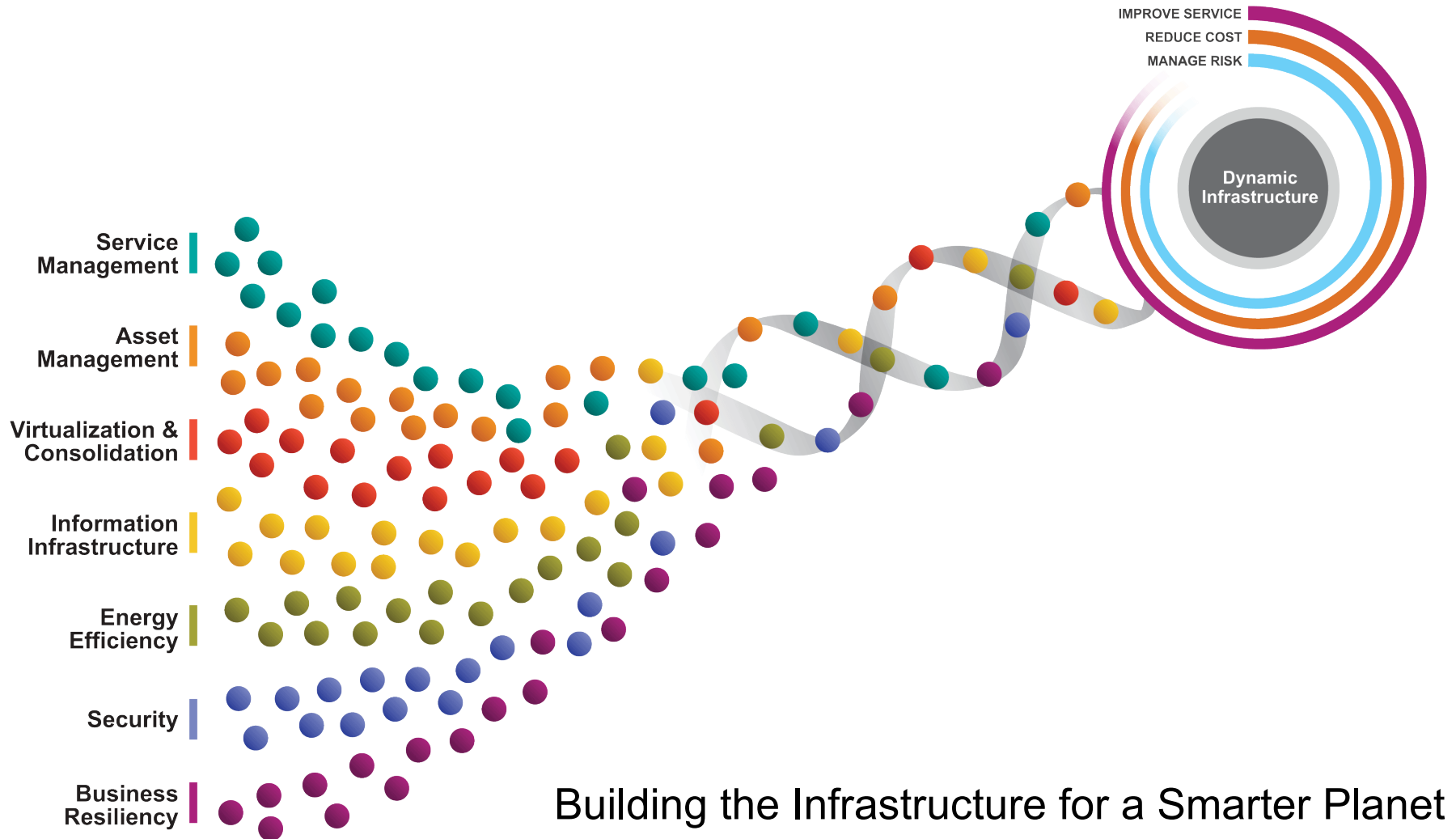
Tivoli's storage suite includes capabilities such as **near instant recovery of Microsoft applications, onboard data deduplication** and integrated DB2 databases

ProtecTIER Appliances

Innovative data deduplication appliances can **reduce 25TB of data into 1TB of storage capacity, 9x faster** than other solutions in the market

Leverage IBM Information Infrastructure

To Create the Foundation for a More Dynamic Infrastructure



Building the Infrastructure for a Smarter Planet

IBM Information Infrastructure

Complete, Integrated, Available Today

- Global reach
- Integrated solutions
- Breadth of capability
- Deep consulting expertise and proven best practices
- Expanded ecosystem and business partner community
- Flexible financing



“We can build an IT infrastructure with which we will be able to deliver **improved service levels, reduce business risks, and manage the information explosion** effectively.”

Joffrey Foronda, Manager for Infrastructure and Storage Management,
Philippine Airlines, Nov. 2008

Thank You

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