



Hitachi Data Systems

Business Continuity Solutions:
Protecting your Critical Business Data

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Enterprise Storage and Solutions

Agenda

- **Hitachi Data Systems Corp Overview**
- **Define Business Continuity**
- **Data Management**
- **Data Protection**
- **Long Term Data Availability**
- **Data Centre Availability**



One of the
world's largest
integrated electronics companies

Manufacturer of over 20,000 products

- Over 1,000 subsidiaries
- Over 300,000 employees

R&D Investment: \$3B+

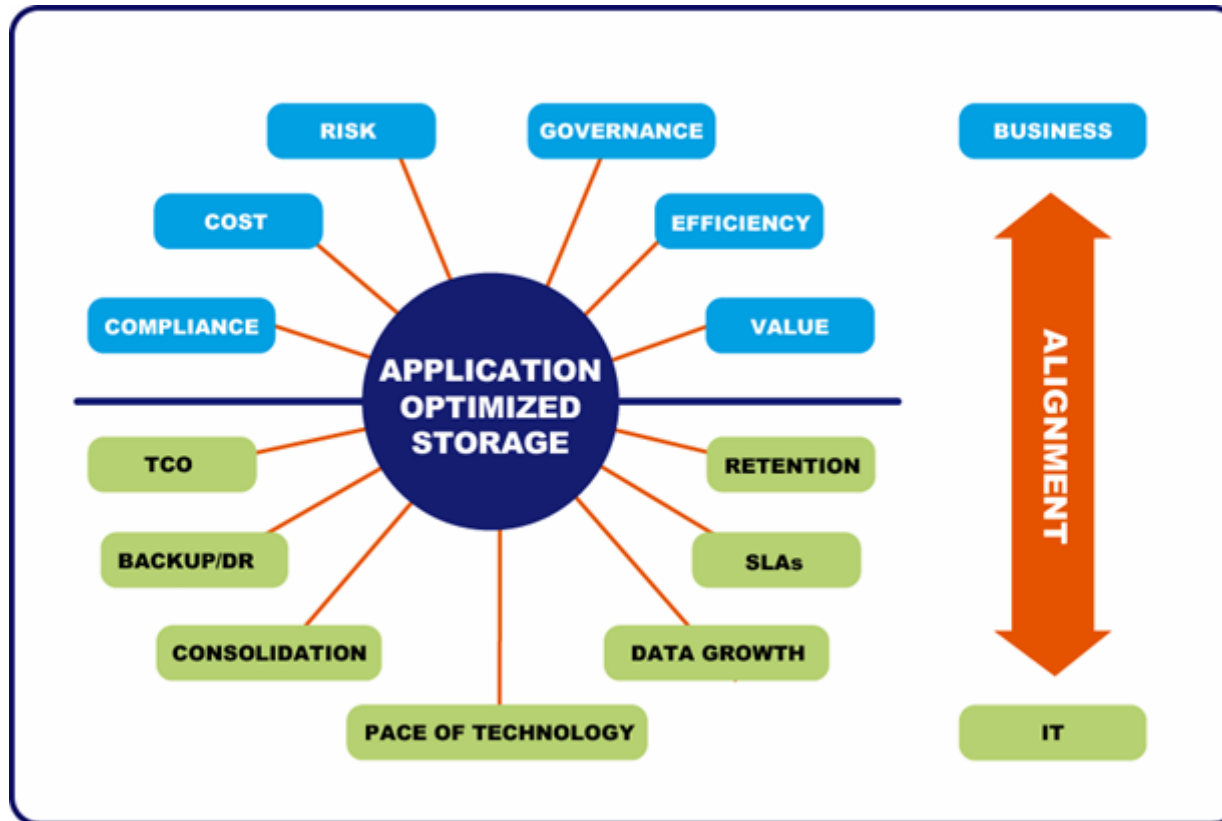
- Over 30% on IT

Over \$7B in cash



FORTUNE Global 500 Company

Application Optimized Storage™: a strategy to align business and IT by optimizing storage infrastructure and management with application requirements based upon price, performance, availability, and functionality





-  ***Reduced TCO***
-  ***Maximum Service Levels, Availability & Business Continuity***
-  ***Mitigating Operational RISK***



Defining Business Continuity

- *Definition #1:*
 - *Business Continuity (BC) is the ability to continue business functions through a disaster. In information technology terms, BC is synonymous with high availability.*
 - *Disaster Recovery is the ability to restart operations after a disaster-related outage.*

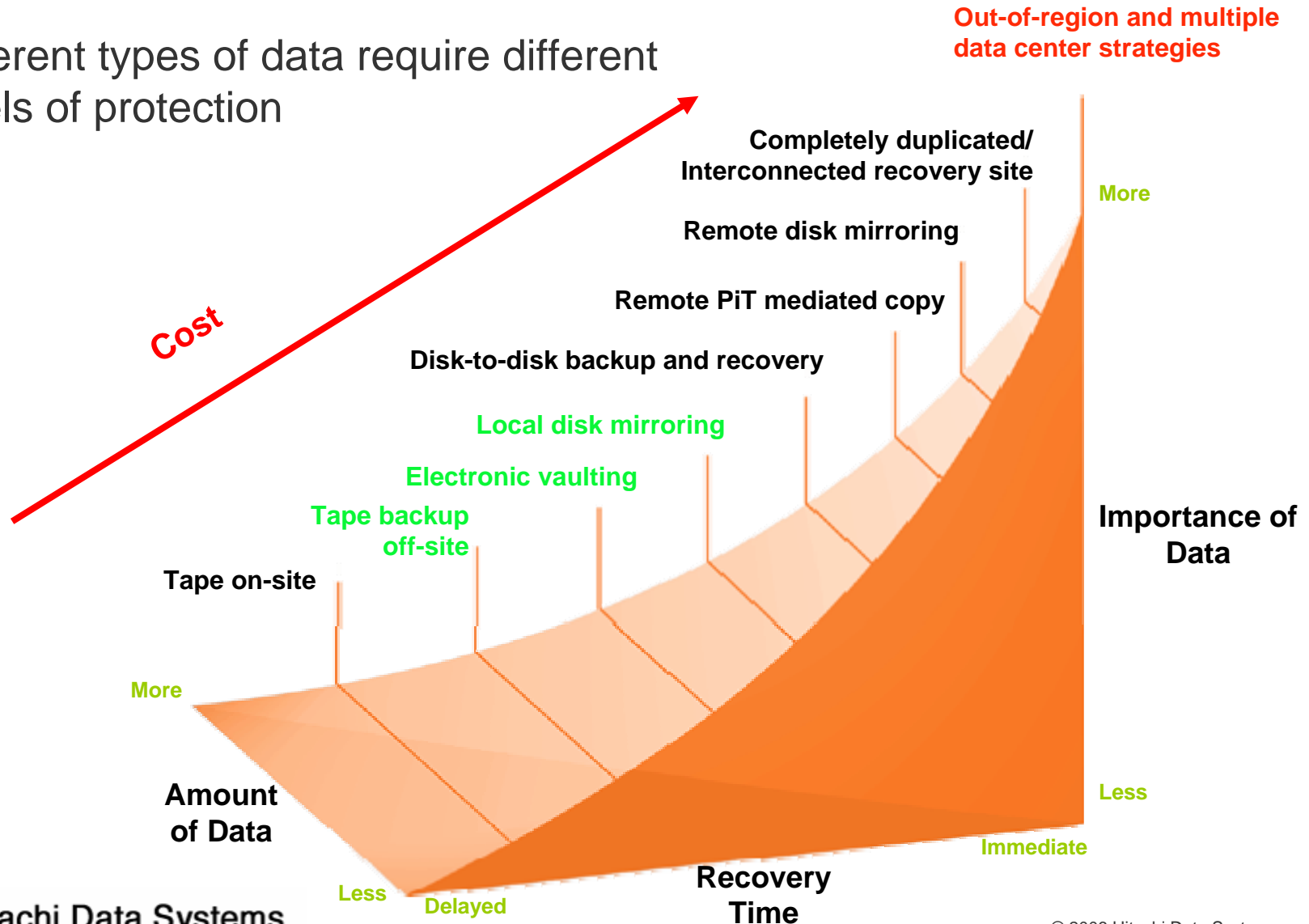
- *Definition #2:*
 - *Business Continuity: The ability of an organization to provide service and support for its customers and to maintain its viability before, during, and after a business continuity event.*

- **Recovery-time Objective (RTO)**
 - Time within which specific business functions must be restored
 - How long can I afford to be down?
- **Recovery-point Objective (RPO)**
 - The point in time in which data must be restored
 - How much data can I afford lose?
- **The actual solution you choose will be based on the costs vs. recovery time**
 - If I spend a little more, how much faster is recovery?
 - If I spend a little less, how much slower is recovery ?

Business Stakeholders MUST Buy into Recovery Objectives for you to Obtain Solution Funding

Data Protection Continuum

- Different types of data require different levels of protection





Data Management

Step 1

Step 1 – Data Management

- The first stage of any Business Continuity solution should address the visibility of data
- It is important to know where the data is stored and under what conditions it is available
 - Is it on highly available disk?
 - Is a tape recovery job required to access the data?
 - What level of protection is provided?
- Without tools to manage the data any Business Continuity solution will be limited in its capability to deliver the desired outcome to the business units

Data Management

**Storage
Resource
Management**

Storage Services Manager

Resource Manager™

Virtual Partition Manager

Volume Migration

Device Manager

Tuning Manager

Dynamic Link Manager

Global Link Availability Manager

Tiered Storage Mgr

Server Priority Manager

Business Continuity

Data Protection

Data Recovery

Service Level Management

Availability & Performance Management

Data Centre Availability



Data Protection

Step 2

Step 2 – Data Protection

- The second stage of any Business Continuity solution should address the immediate local protection of data
- What RAID level of disk is most appropriate?
- Review Backup and Recovery capabilities
- Are there any legal requirements on immutability of data?
- What are the Compliance or Governance requirements for the business?

The Hitachi Data Protection Suite Platform

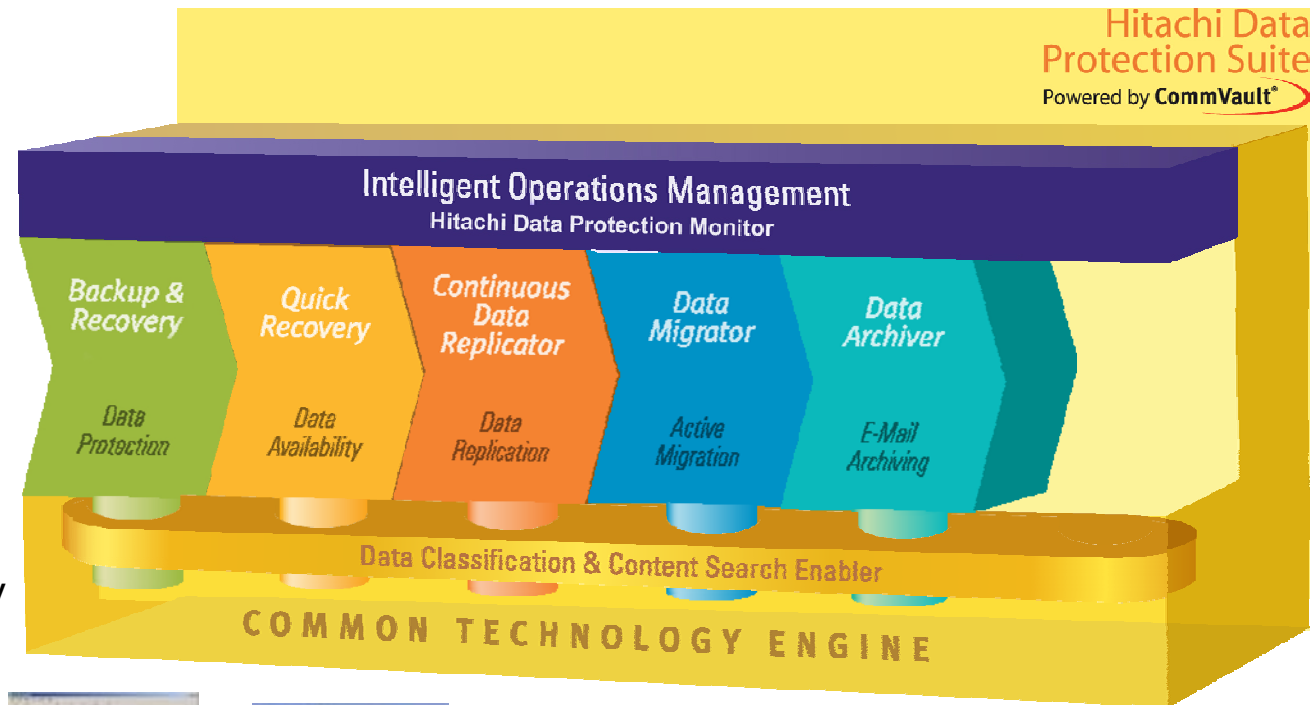
HITACHI
Inspire the Next

Products For:

- Reliable Data Protection
- Business Continuance
- Disaster Recovery
- Corporate Compliance
- Management and Reporting

Helping Customers:

- Increase Data Availability
- Improve Operations
- Save Time
- Save Money
- Protect Their Investment



Scheduling



Media Management



Policy Management



User Interface



Index

ROI for Seven Customers

1	Company Type	Education	Healthcare	Manufacturing	Entertainment	Healthcare	High Tech	High Tech	Average ROI
2	City	Overland Park	Klamath Falls	O'Fallon	Knoxville	Branson	White Plains	Beaverton	
3	State	KS	OR	IL	TN	MO	NY	OR	
4	Country	United States	United States	United States	United States	United States	United States	United States	
5	Licensed Agents	AD, DM Windows, Exchange, Oracle, Solaris, SQL, Windows	Exchange, Novell, SQL, Windows	AD, DM Exchange & Windows, Exchange, HPLI, SQL, Windows	AD, Exchange, Windows	AD, DM Exchange & Windows, Exchange, Windows	Exchange, HP-UX, AIX, Linux, Solaris, SQL, Windows	Exchange, SQL, Windows	
6	Total Number of Agents	12	12	12	152	106	62		
7	Galaxy Functionality	D2D		D2D, Synthetic Full		D2D, Synthetic Full	D2D, Synthetic		
8	Who We Beat	Veritas		Syncsort, Veritas	Veritas	Syncsort, Veritas	Veritas		
9	Who We Beat	Veritas		ARCserve, BackupExec	Veritas	BackupExec	Networker		
10	Problem(s) Solved	New Storage Infrastructure, IT Efficiency, Reporting, Backup Failures, Restore Failures, Administrative Time	IT Efficiency, Backup Failures, Restore Failures, Administrative Time	Backup Window, New Storage Infrastructure, IT Efficiency, Reporting, Backup Failures, Restore Failures, Administrative Time	Backup Window, New Storage Infrastructure, IT Efficiency, Reporting, Backup Failures, Restore Failures, Administrative Time	Backup Window, New Storage Infrastructure, IT Efficiency, Reporting, Backup Failures, Restore Failures, Administrative Time	IT Efficiency, Backup and Restore Speed, Backup Failures, Restore Failures, Administrative Time, Cost Reduction		
11	Backup Failure Rate	25% / 0%	20% / 10%	35% / 0%		35% / 0%	40% / 0%		
12	Tape Cost			\$3,000 / \$15,000		\$30,000 / \$15,000			
13	Admin Time (hrs/Avk)	50 / 4	15 / 12	24 / 2	15 / 2	40 / 6	15 / 5		
14	Backup Time (hrs/full)	46 / 12	20 / 15	19 / 7	70 / 18	28 / 8	48 / 5		
15	Restore Time (mins/file)	840 / 2	90 / 6	360 / 2	120 / 7	360 / 2	30 / 5		
16	Clusters			Windows		Windows	Exchange		
17	Number of Servers	75	15	16	67	50	37		

• Backup reliability increased **30%**

• Tape costs reduced by **60%**

• Admin time reduced by **80%**

• Full backup time reduced by **75%**

• Single file restore time reduced from **4 hours to 6 minutes**

30% → 2%
50% tape cost reduction
24 hrs/wk reduced to 5 (80% reduction in admin time)
40 hrs/full reduced to 10 (75% reduction in backup time)
260 minute file restore time reduced to 6

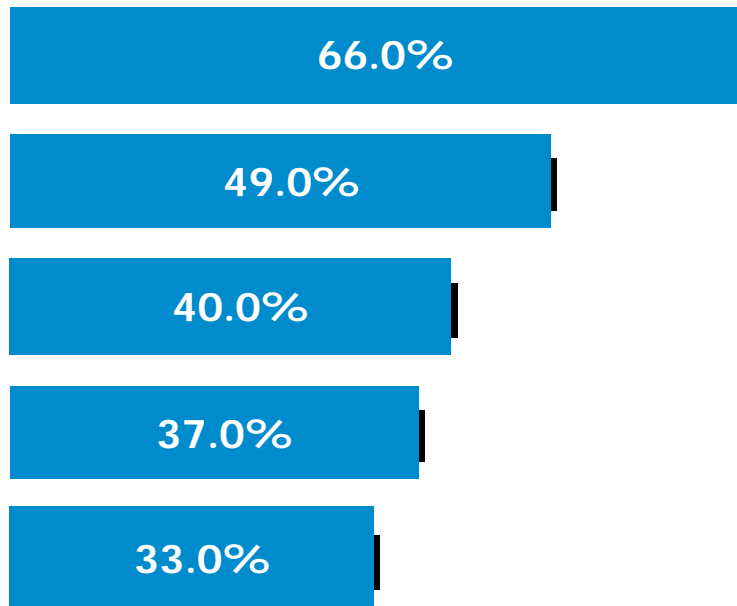


Long term Data Availability

Step 3

Problems with backup & recovery systems

Enterprise Storage Group Survey asked:
“What are your biggest backup & recovery problems?”



- “Up to 60% of backups do not properly execute in typical network environments.” (ESG)

- “Restores & Backup Management will be the single largest operational problem IT organizations face over the next several years.” (ESG)

Backups are complex & take too long

- “Analysts estimate that between 40% and 60% of backup tapes aren't recoverable when needed.

Recoveries take too long

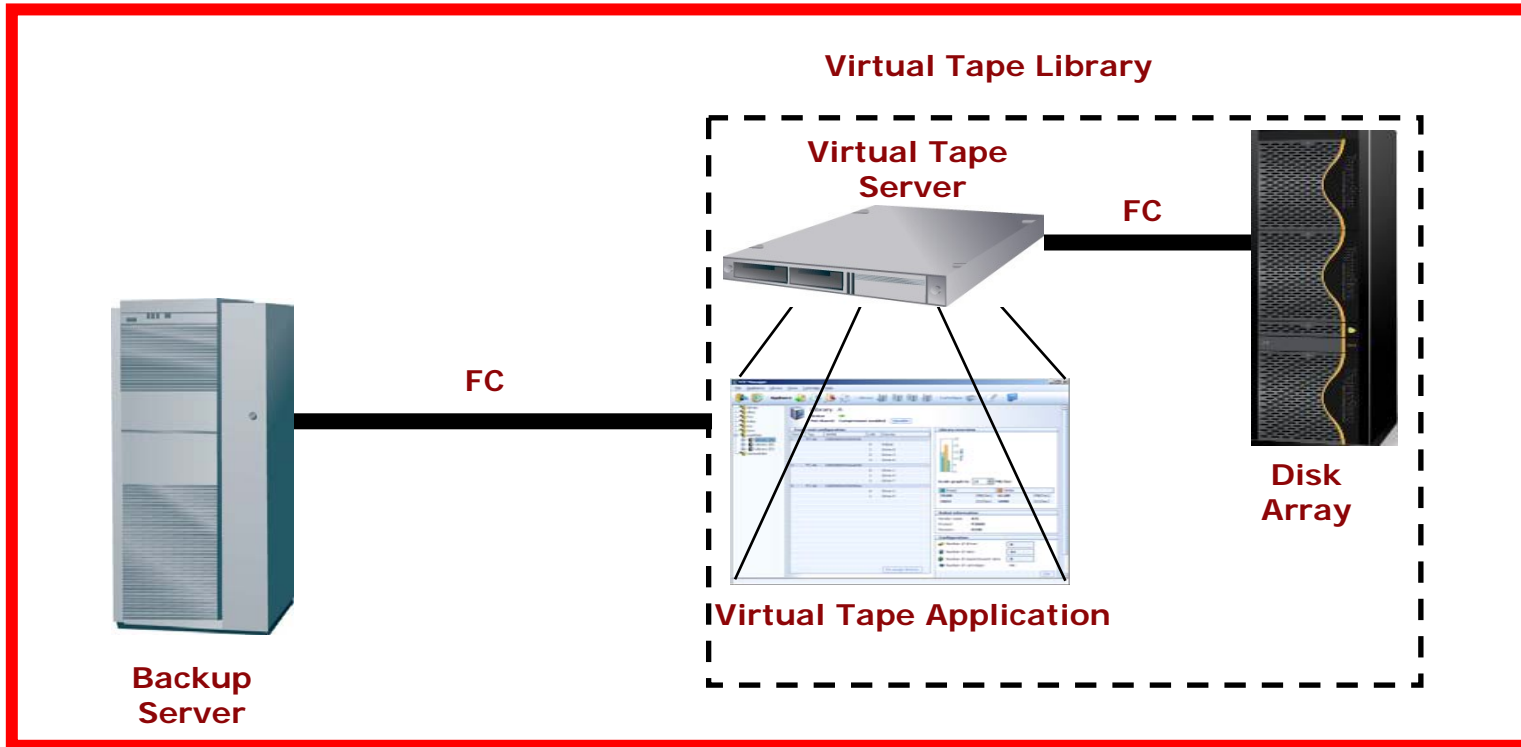
- “Analysts estimate that between 40% and 60% of backup tapes aren't recoverable when needed. With the average hourly cost of downtime running anywhere between \$50,000 and \$2 million, the outcome of an incomplete backup can be devastating to an organization.” (InfoStor)

Difficult to measure B/R success

Media management

ESG 2005

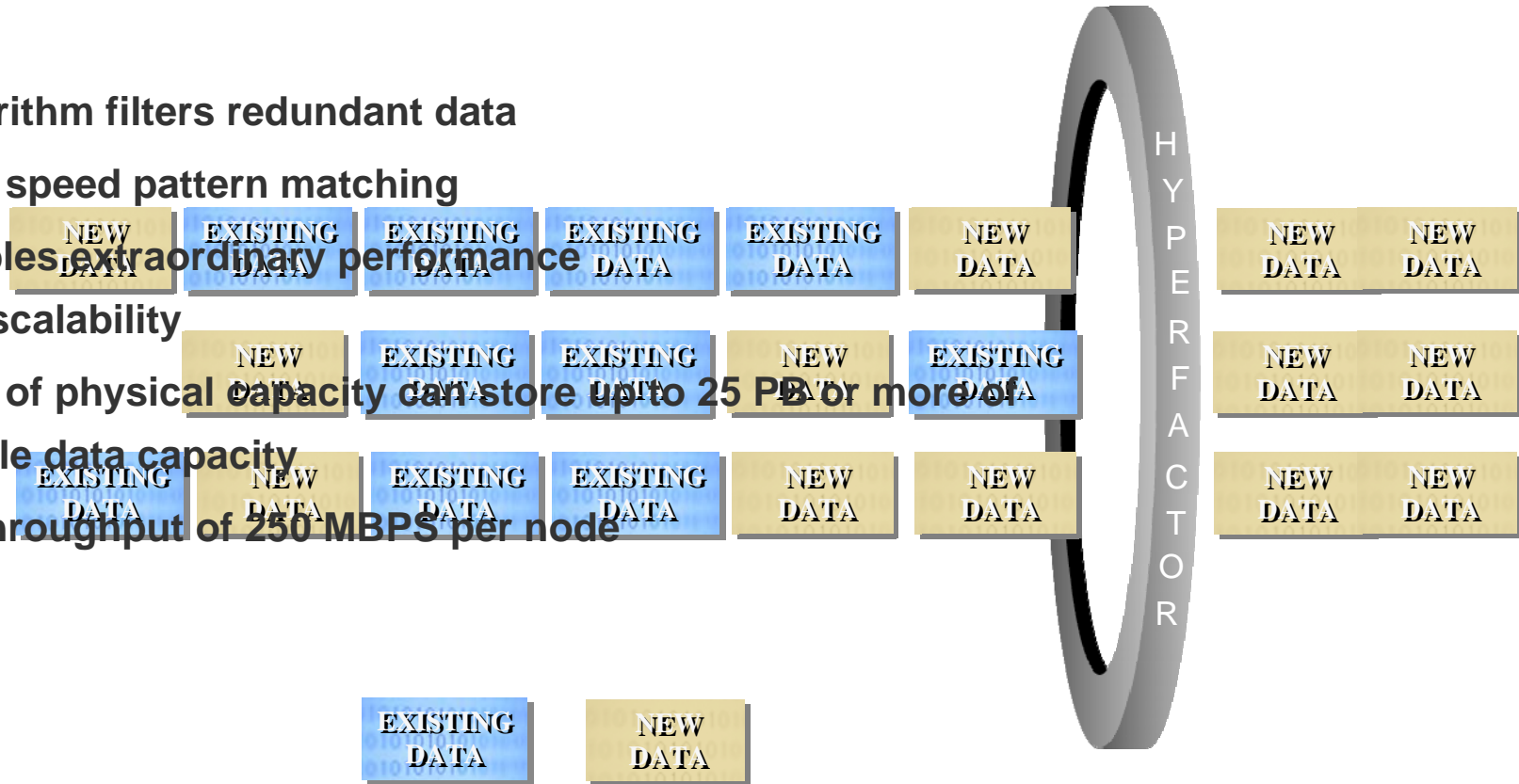
Virtual Tape Overview



- Software solution that resides on a standard server
- Emulates one or many tape library units, including drives, cartridges and robotics
- Uses FC-attached disk array as the backup medium
- May include compression or de-duplication technology

HyperFactor for De-Duplication

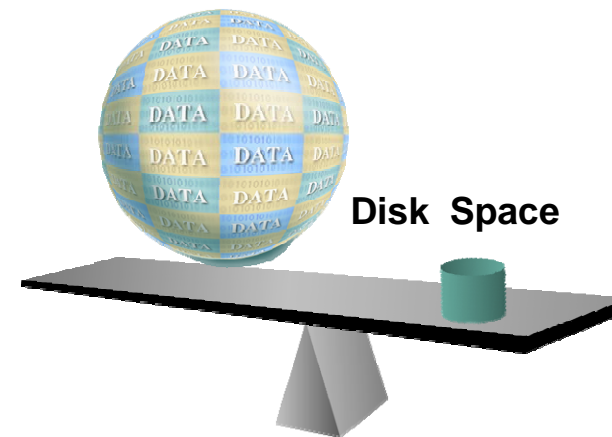
- Algorithm filters redundant data
- High speed pattern matching
- Enables extraordinary performance and scalability
- 1 PB of physical capacity can store up to 25 PB or more of usable data capacity
- I/O throughput of 250 MBPS per node



*HyperFactor reduces required capacity up to **25:1** or more!*

Virtual Tape Library Solutions

- Improved Data Reliability
- Mitigates Risks
- Recovery Capability
- Simplified Management:
- Improved Backup Integrity

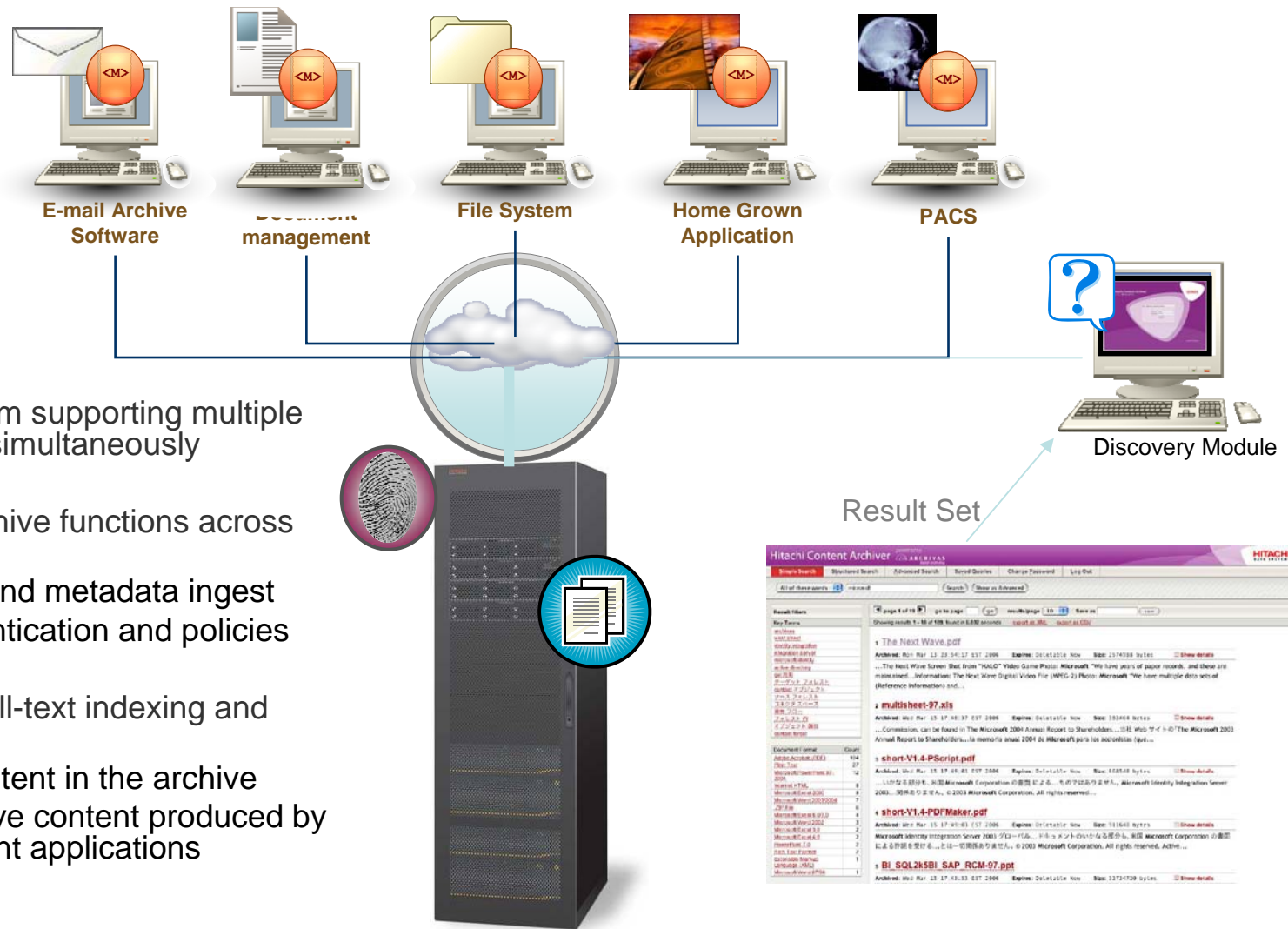


- **Addresses the fundamental data growth problem!**

Active Archive Market Drivers

- The ability to protect information via policies prescribed by business needs
- Regulatory Compliance
- The ability to know where information is at all times
 - Discovery and litigation
 - Historical analysis
 - Business policy
- Reduce the cost of storing historical information
 - Well-known access methods and formats (i.e., HTTP, WebDAV, NFS, SMTP, and CIFS, and files, directories, and filesystems)
- REQUIREMENT:
A storage infrastructure with **Permanence and Transparency**

Content Archiving



- Single platform supporting multiple applications simultaneously
- Common archive functions across content types
 - Data and metadata ingest
 - Authentication and policies
- Embedded full-text indexing and search
 - All content in the archive
 - Retrieve content produced by different applications

Data Protection and Long Term Availability

Archiving

Content Archiver powered by Archivas®

Data Migrator

Message Archive for Compliance

Data Archiver

Message Archive for E-mail

Data Protection

Data Protection Suite, powered by CommVault®

Backup Services Manager, powered by APTARE®

Protection Manager

Virtual Tape Facility, powered by Diligent®

Business Continuity

Data Protection

Data Recovery

Service Level Management

Availability & Performance Management

Data Centre Availability



Data Centre Availability

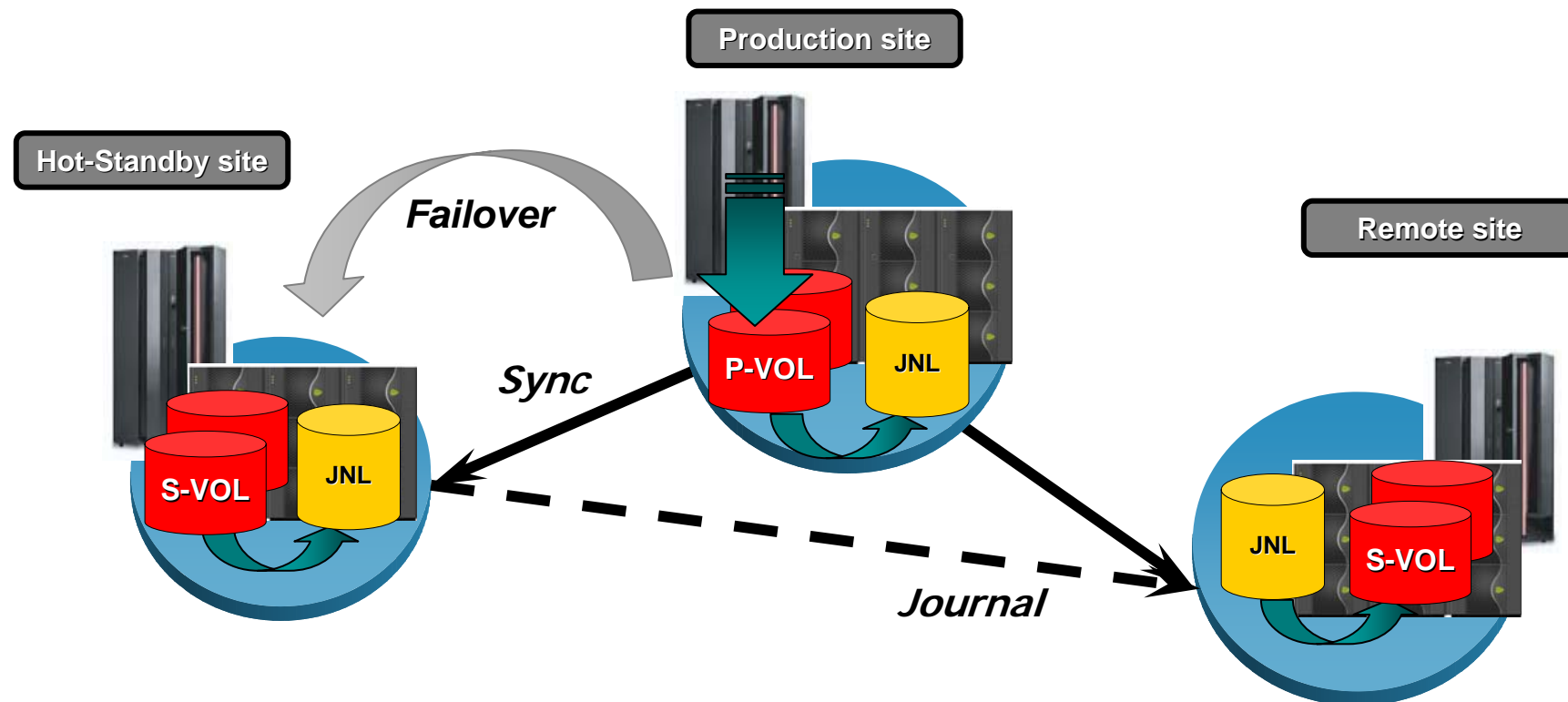
Step 4

Step 4 – Data Centre Availability

- At this stage we are now considering higher impact failures that require site failover
- Data Replication technology is required
- Cross site communications for Data transfer are needed
- How much data can you afford to lose – Hours or Seconds?
- How automated does the recovery need to be?

- Synchronous Replication such as Hitachi TrueCopy
 - Highest Availability with Lowest RPO.
 - Only metropolitan distance is supported due to latency and impact to Host I/O performance.
 - Typically the links are Fibre using WDM technology
- Asynchronous Replication such as Hitachi Universal Replicator
 - Best suited to long distance (>50km) between sites.
 - Depending on Bandwidth of links between sites the RPO can be as low as 5 seconds
 - Latest technology uses Journal disk to buffer write I/O when there is not enough Bandwidth between sites
 - Typically requires Channel Extenders such as Brocade 7500 or Edge M3000

- High End solutions involving multiple data centres catering for local site failover but also covering the less frequent but highly disruptive regional disasters



Data Centre Availability

Data
Replication

Universal Replicator

Replication Monitor

TrueCopy™ Remote Replication

ShadowImage™ In System Replication

Business Continuity

Data Protection

Data Recovery

Service Level Management

Availability & Performance Management

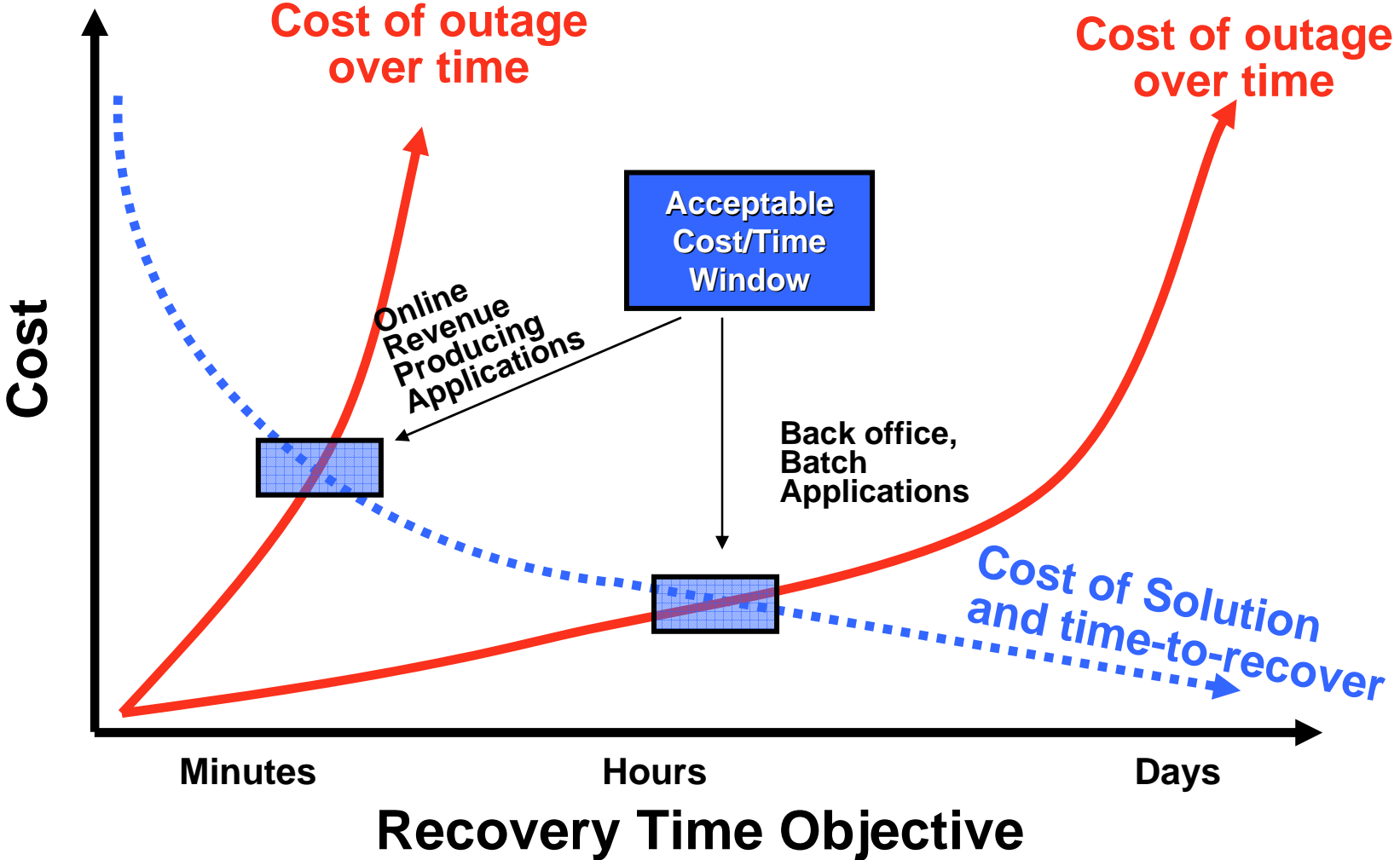
Data Centre Availability



| Summary

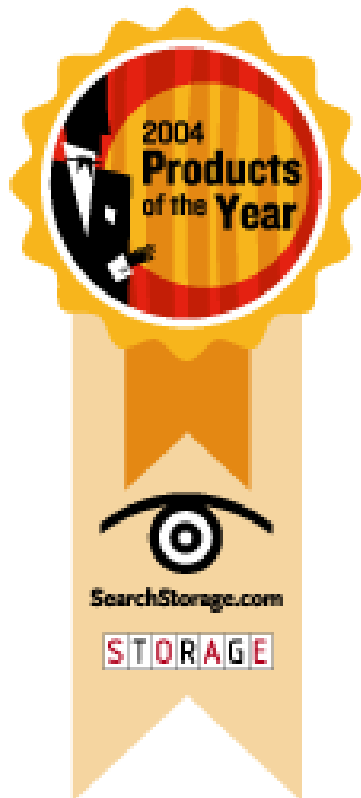
- Data Management is necessary to monitor your data availability, from Data Backup success to Volume / LUN Pair synchronization
- Protecting the data through reliable Backup and long term storage methods is critical to business level recovery
- Ensuring the Business objectives for data availability are matched to the level of component and data centre redundancy
- Technology is available to achieve the highest levels of Business resilience, at what point have you met the business expectation
- Are the Business Policies and Procedures in line with the IT capability

Recovery Time vs. Cost - Evaluate each application separately



Must do activity

- Visit the HDS stand at the conference
- Attend the HDS Technical Breakout session later today
 - Lincoln Chen will be discussing Data Centre Availability through the use of HDS TrueCopy and Universal Replicator including 3 Data Centre configurations and he will give out a case study of successful implementation of 3DC in China
- Talk to the vendors about your requirements and see what is available to match your business needs
- Enter the draw to win a Hitachi 40GB External Hard Disk Drive



Thank you for your attendance



A New Category of Storage for
TagmaStore - Networked Storage
Controllers (NSC)