# The Marks & Spencer Solution

HDS Reseller Academy

HDS Sefton Park

09 July 2009

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Practice Leader, Data Storage and Protection

# M&S had a problem ...

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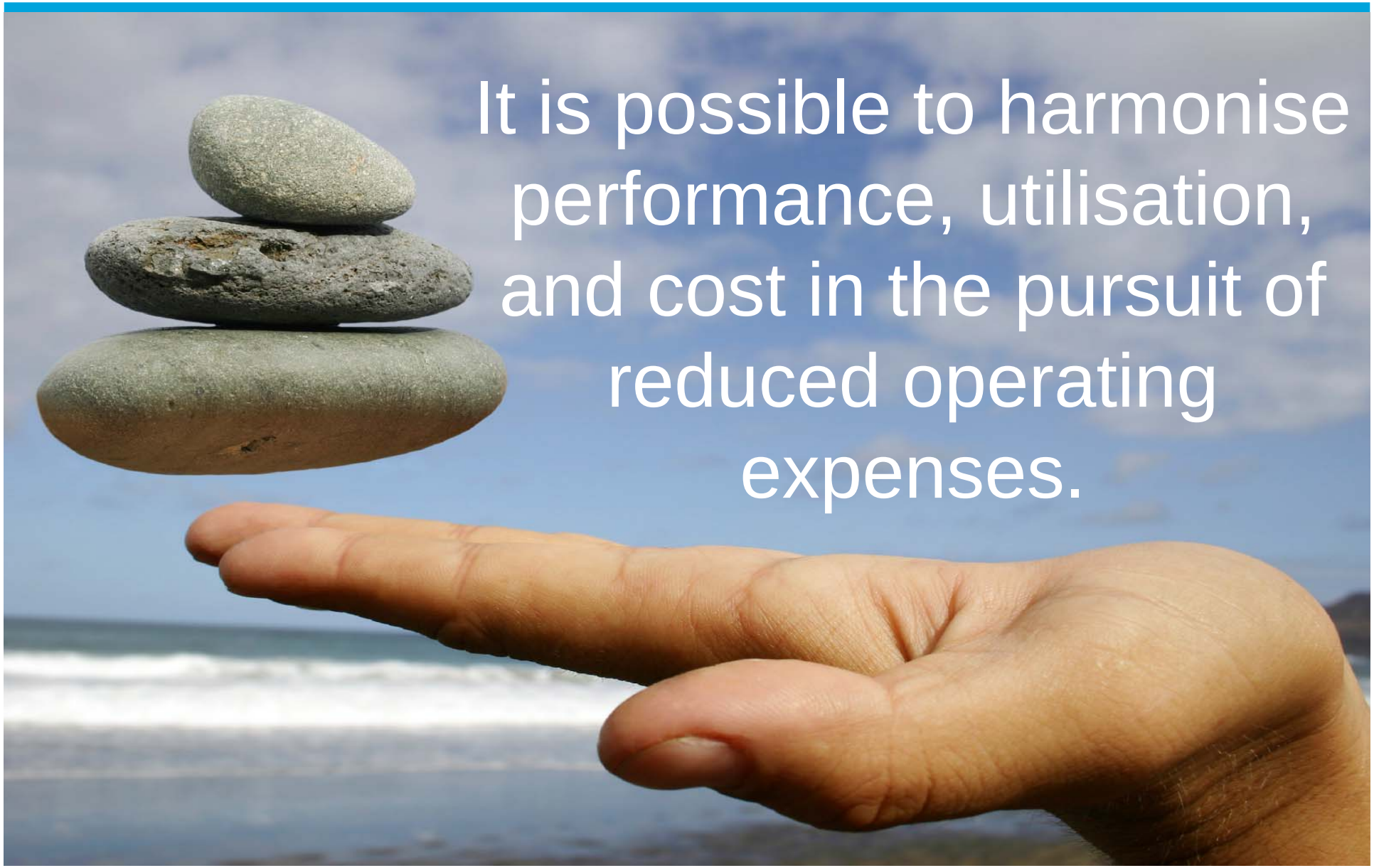
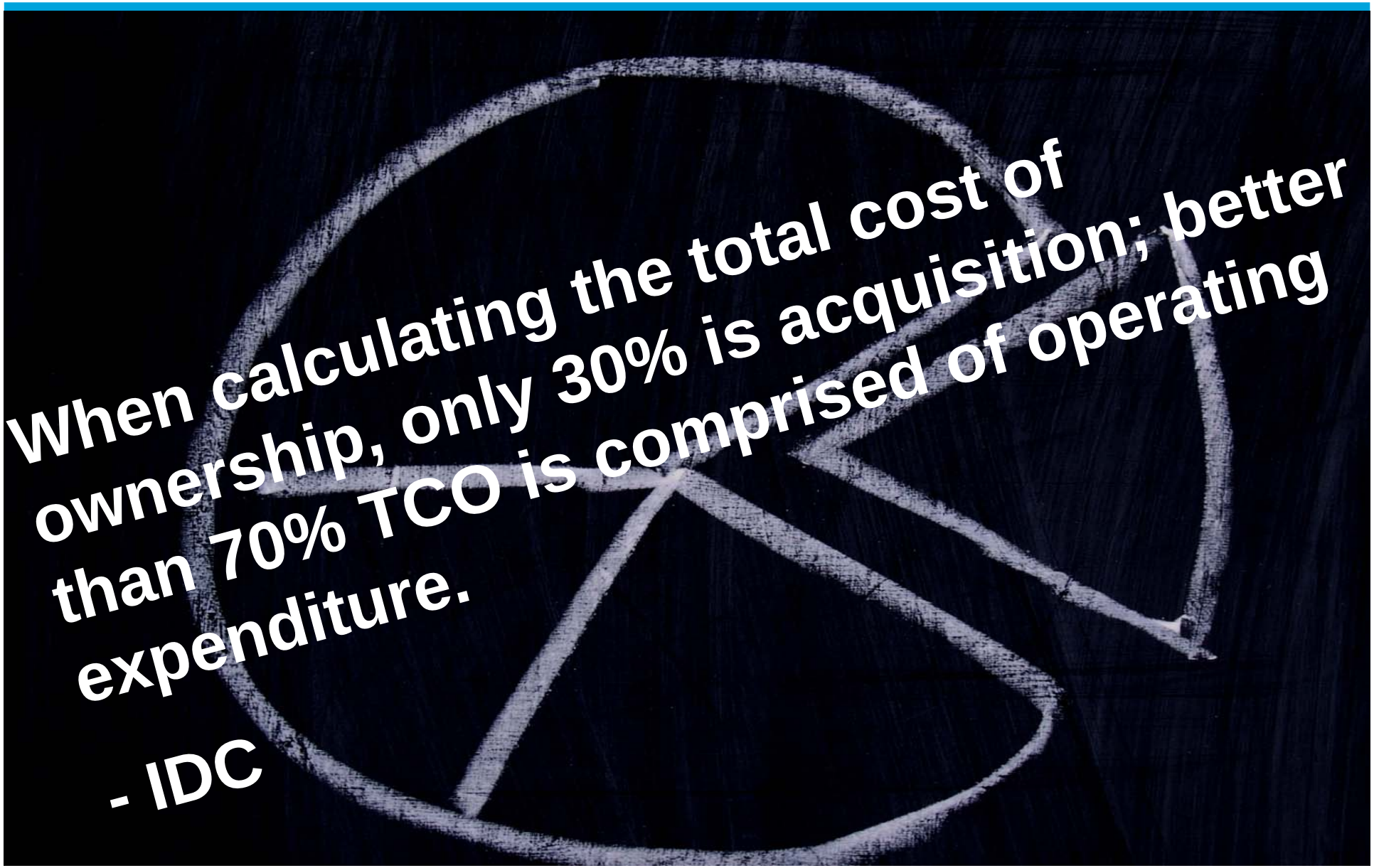
# ... which frankly wasn’t a unique problem.

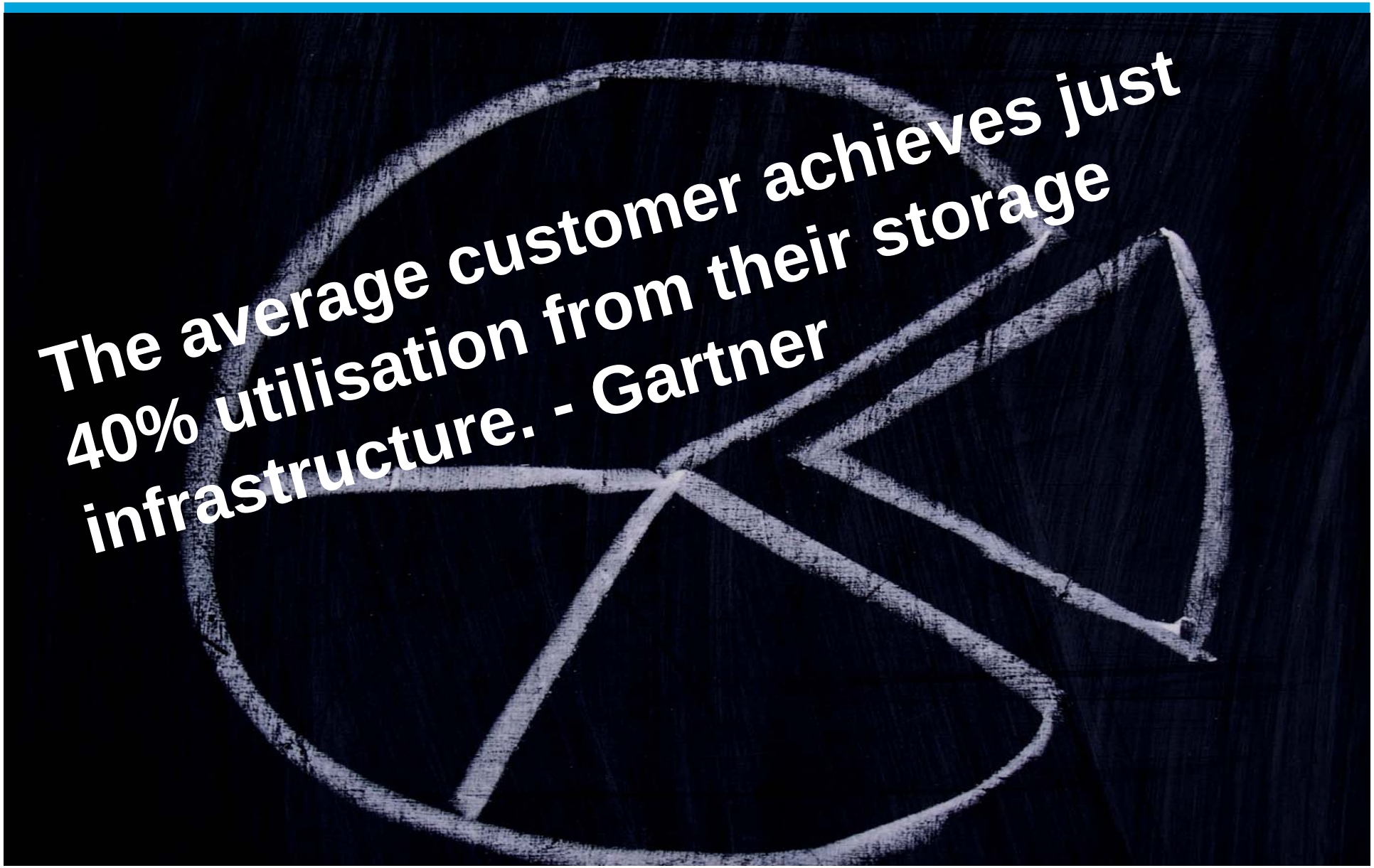
# This was our solution.



# The underlying issues, however ...



# ... and no one had told them this, either.



# Our Approach

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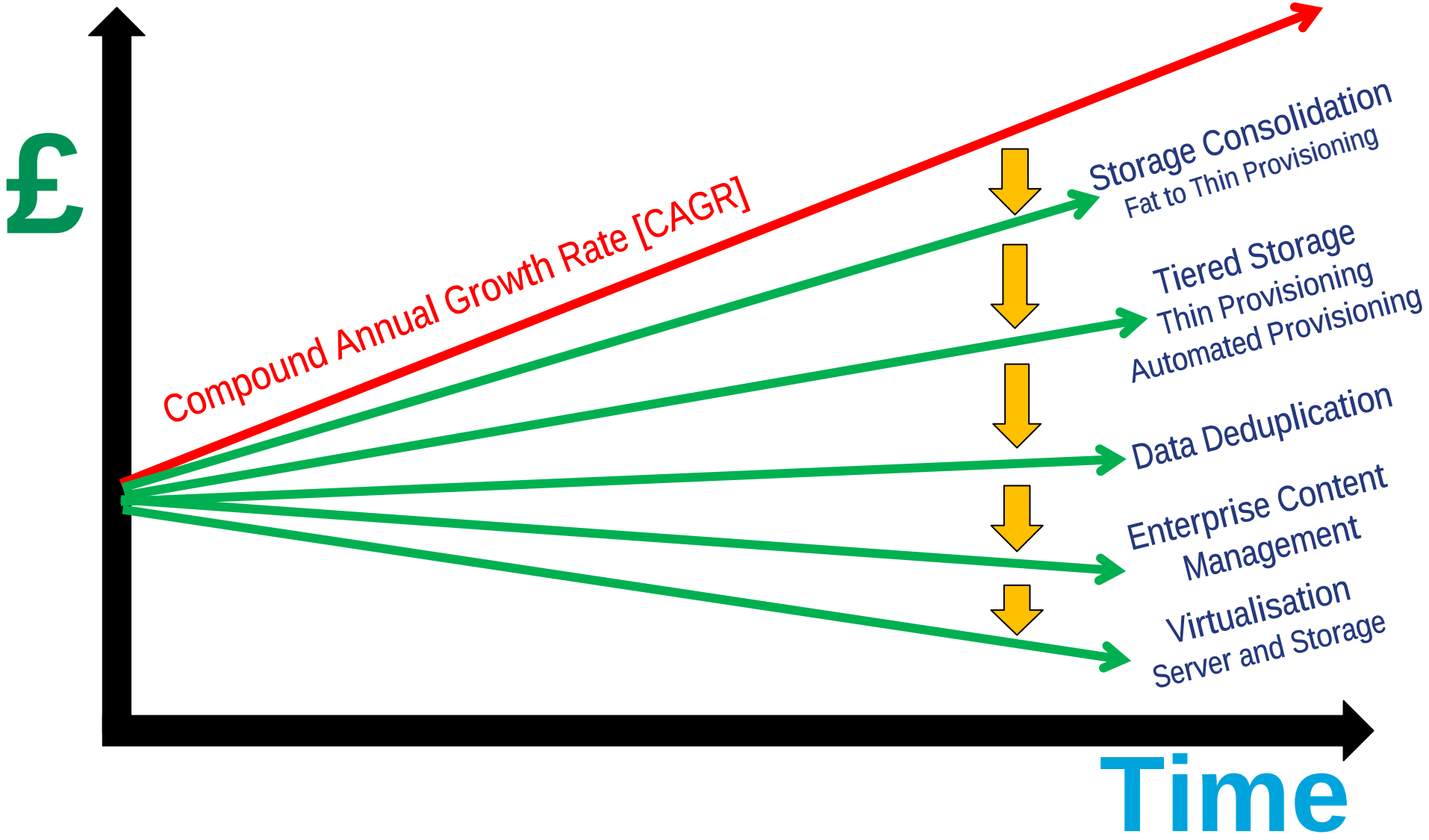
# Computacenter Storage Strategy

## CAPEX Avoidance / OPEX Reduction

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# The Solution

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# Storage management without data mobility can be complex

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# … largely manual ...

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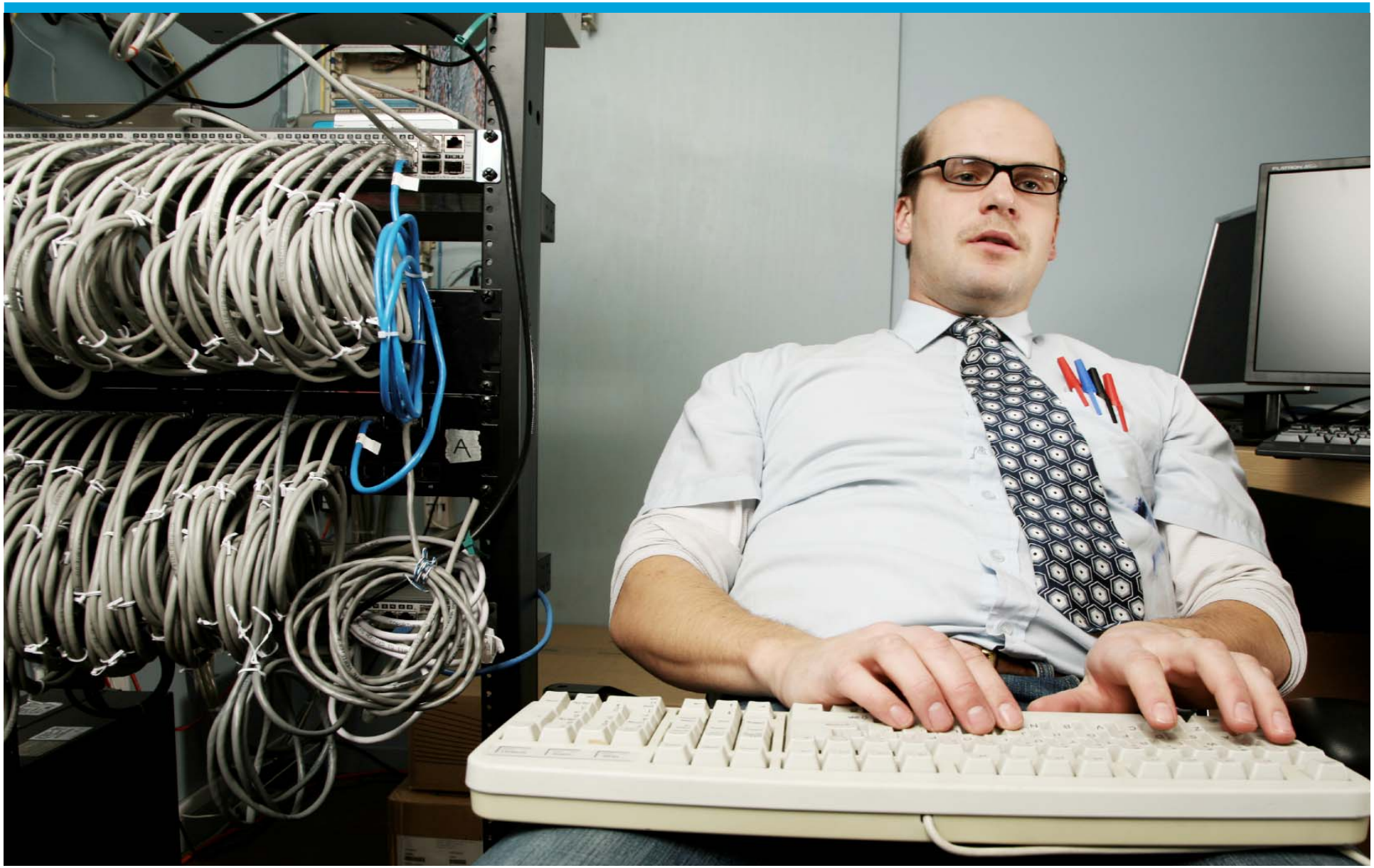

# … and terribly inefficient.

# So why would you keep just buying more of these?!

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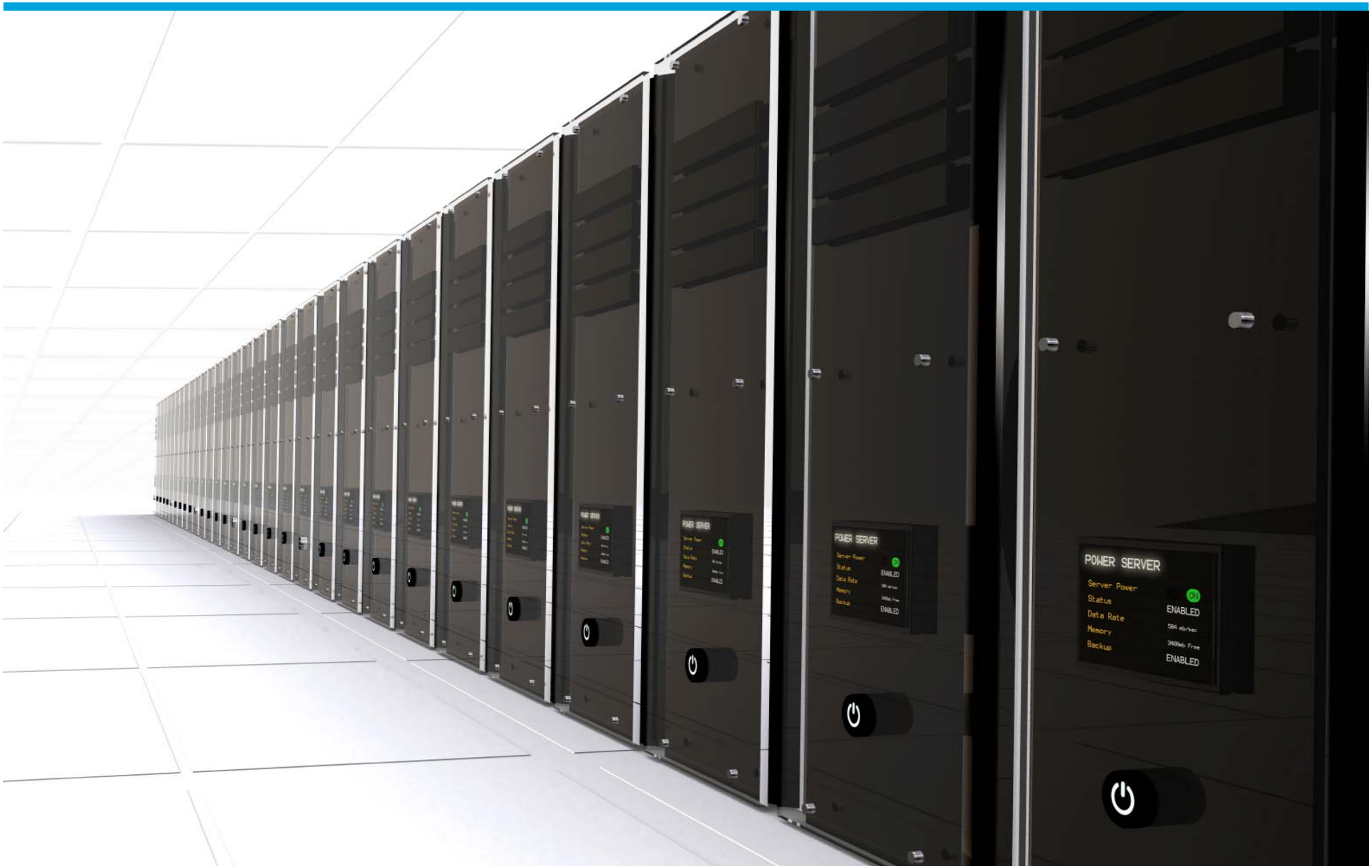

# We firstly mapped what the data was ...

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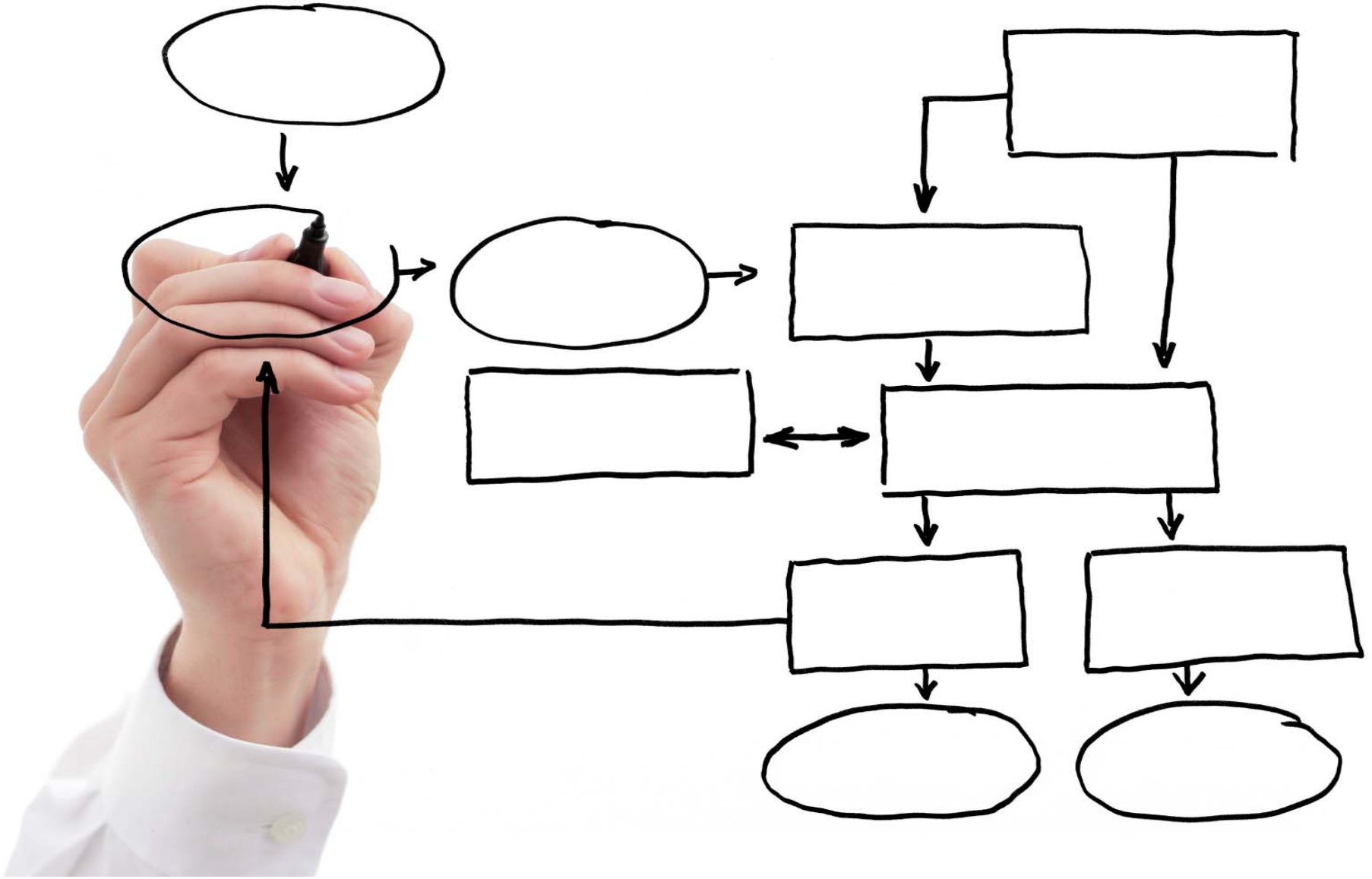

# ... knowing all data is just, well …

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# Zero Page Reclamation

## Fat to Thin Provisioning Migration

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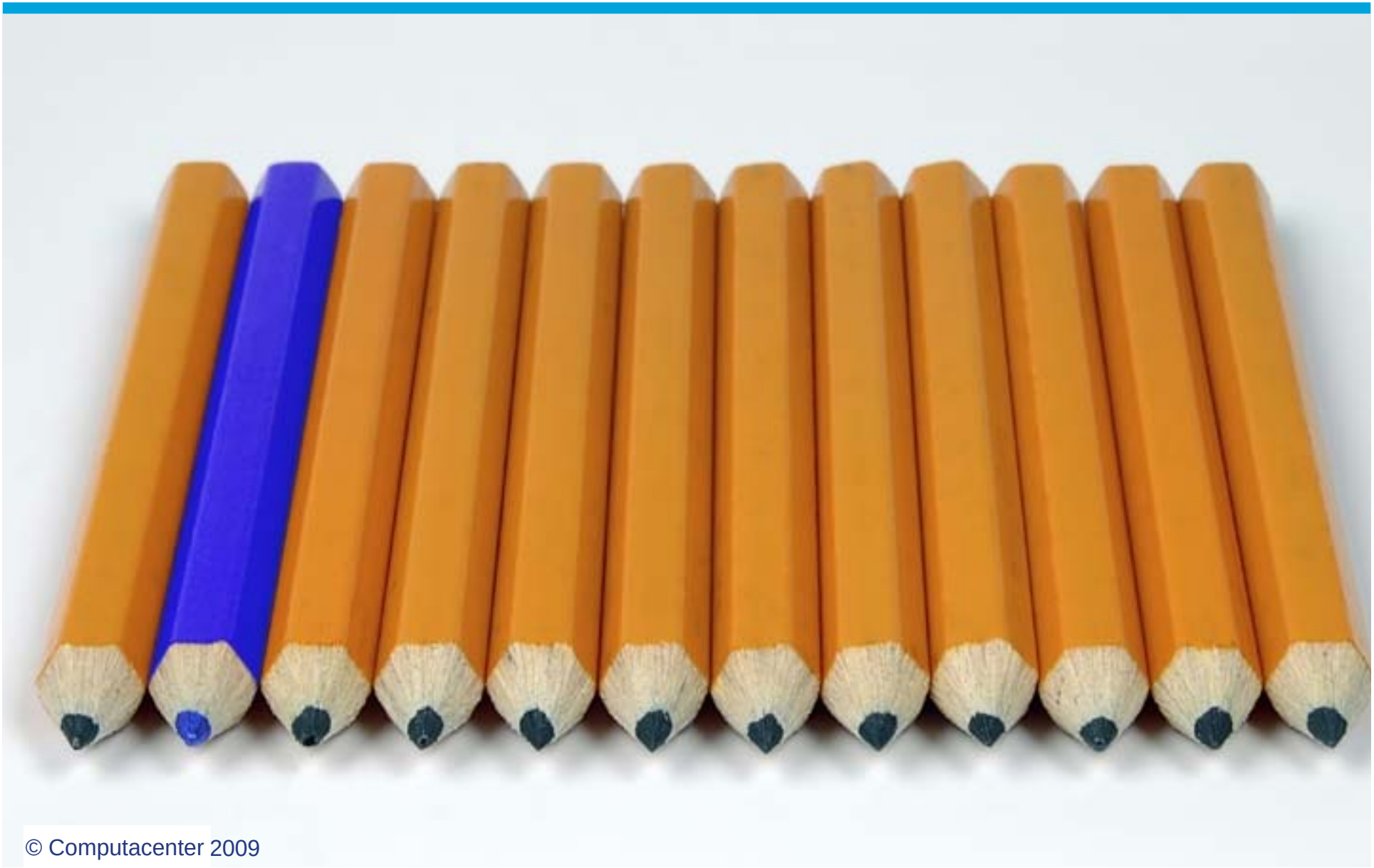
# … and thin provisioning.



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# M&S Solution

Computacenter presented **seven available options** to M&S and helped them to understand why the **HDS solution** was the most viable through composite scoring method.

**HDS USPV** to provide **40TB** to satisfy immediate storage requirements.

Added benefit of **storage virtualisation** to introduce data mobility and low impact data migrations.

**Low impact data migrations** will allow the previously non-performant DMXs to be reconfigured and the BIN files updated with minimal disruption to the production business.

**HDS AMS** and **HCAP** 'pull through' once we had got past the danger zone.

Recent Zero Page Reclaim [ZPR] job migrated a 6TB test volume to a 3.3TB thin provisioned volume amounting to a better than **£25k savings** in disk cost.

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# Thank You

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# Sales Track

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Making the most of our partner programme

# IT Culture & Storage Economics

*Tony Reid, UK Services Director*

# Agenda

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- Behind the technology and the solutions
  - Some history
  - A Service Lead view
  - Adoption

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# Some History

# Stepwise Server Consolidation

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Source: Meta Group – 2000

1. Random server proliferation: Highly inefficient

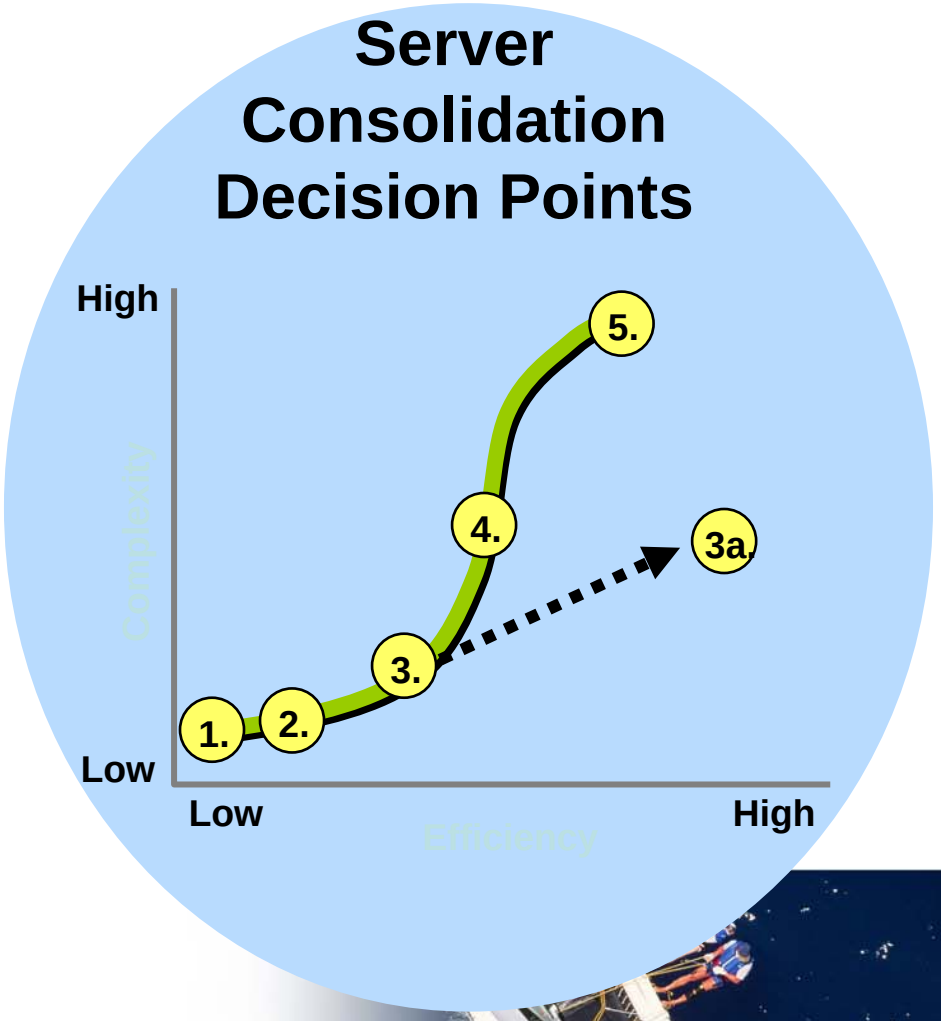
2. Physical co-location of systems (e.g., server and storage)

3. Storage consolidation

3a. "Legacy" consolidation of smaller applications

4. Like-workload consolidation

5. Last and bravest choice: Mixed workload consolidation



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- Storage Consolidation
- Started with the big multiplatform box
- Lowest platform denominator availability

- Building a single storage management team

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- Storage Networking
- Next wave of storage consolidation
- Enable early tiered storage concepts
  - Through infrastructure components
  - Through differing storage costs

- Adoption of Charge Back policies

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# What's Next

# Service Oriented Storage

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Migration Policy

Application Group - A
Application Group - B
Application Group - C
Application Group - D
Application Group - E
Application Group - F

Class-A
99.999%
5mS Avg
RPO-0S
RTO-1H

Class-B
99.99%
10mS Av
RPO-0S
RTO-2H

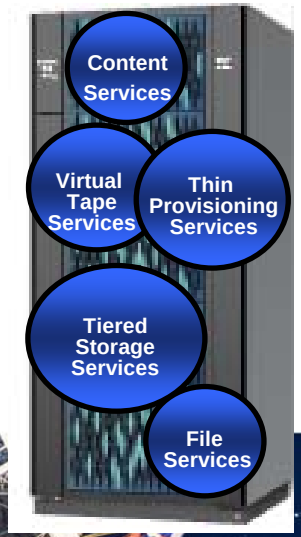
Class-C
99.99%
10mS Av
RPO-1H
RTO-12H

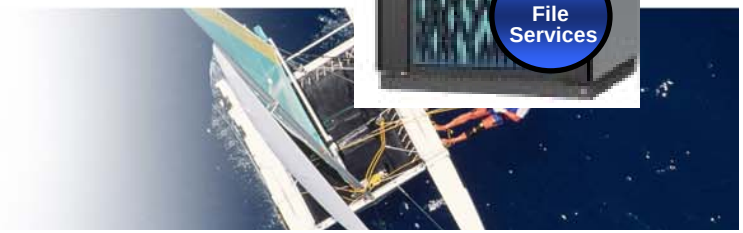
Class-D
99.99%
File
Storage
Class

Class-E
99.9%
Backup
Storage
Class

Class-F
Archive
Storage
Class

Storage Service Catalog



# Service Oriented Storage

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Movement Policy

Application Group - A
Application Group - B
Application Group - C
Application Group - D
Application Group - E
Application Group - F

Class-A
99.999%
5mS Avg
RPO-0S
RTO-1H

Class-B
99.99%
10mS Av
RPO-0S
RTO-2H

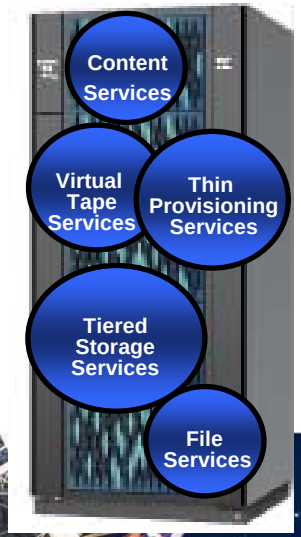
Class-C
99.99%
10mS Av
RPO-1H
RTO-12H

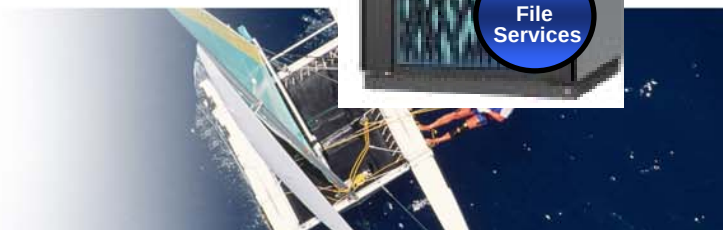
Class-D
99.99%
File
Storage
Class

Class-E
99.9%
Backup
Storage
Class

Class-F
Archive
Storage
Class

Storage Service Catalog



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- How do we deliver storage as a service
  - Technology is ready and in use now
  - True SERVICE catalog skills exist today
    - Design
    - Implementation
    - Management

- But – how do you Charge Back

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- ‘Contract’ to deliver Service Levels
- Use the Service Catalog
- Account for the risk
  - Technical
  - Commercial

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- Explore the service lead opportunity
  - Don’t expect immediate acceptance
- Utilise the technology and solutions now
  - Commercial benefits are too compelling not to
- What can HDS do to help
  - We are experts

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# Thank you

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Making the most of our partner programme

# Modular Solutions

*Rupinder Brar, UK & IR Modular Business & Partner Manager*
*David Parker, Territory Account Manager*

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# HDS UK Partner Day 2009

## Modular Solutions

Thursday 9th July 2009

**Rupinder Brar**
**UK&I Modular Business & Key Partner Manager**

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# Agenda

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- HDS Modular Solutions
  - Sales & Marketing support
    - Qualification questions
    - Applications Solution Sales tools
  - The Proof - *“What the papers say”…*
  - HDS Partner & Customer rewards – modular promotions
- David Parker – UK Sales Account Manager
  - Putting it into practice
- Q & A / Discussion

# Sales Tools; Opportunity Qualification Questions

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## Application

| QUESTION | LOOK FOR | HOW TO USE THE INFORMATION |
|---|---|---|
| What applications will be connected to the storage system? | Databases (Oracle/SQL/Access/Sybase) and OLTP (Online transaction processing) | Performance **is the key criteria for storage systems.** The design requires: (1) large cache, (2) multiple drives to spread the load, (3) multiple ports to maximise throughput to the server(s). |
| | Email (e.g. Microsoft Exchange, Lotus Notes) | |
| | Unstructured data (e.g. document files, spreadsheets, images, web pages, etc.). Typically accounts for 80% of the data in an organization today. | |
| Do you require a performance environment? | These are usually Database, Email and also File-based applications. | |

## Operational Efficency

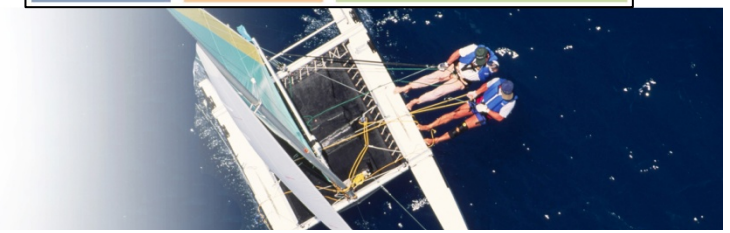
| QUESTION | LOOK FOR | HOW TO USE THE INFORMATION |
|---|---|---|
| Are you interested in reducing your operational costs? | | The capital cost (product cost) is typically just 20-25% of the storage Total Cost of Ownership. The remaining 75-80% is operational cost. The unique design of the AMS2000 can help reduce the operational cost:<br><br>Reduced labour cost (storage admin): load balancing is automatic (handled by the Active-Active symmetric controller) so no effort is required to maintain performance. Set-up costs are dramatically reduced (particularly in a VMware environment) because the AMS2000 eliminates the normal labour-intensive mid-range practise of "LUN ownership".<br><br>Reduced software license cost: No additional path management software is required because the AMS2000 supports the native Operating System multi-pathing.<br><br>Reduced power consumption cost (see below). |
| Is space in your datacentre critical? | Space savings = cost savings<br><br>Some hosting companies charge up to €8000 per "tile" in datacenters. | High density trays provide 48TB capacity in one disk tray and up to 432TB in one Rack(2). This capacity will be doubled when high capacity drives are announced.<br><br>(2) Dependant on maintenance facilities at the customer site and power consumption limitation in a rack, the total amount per rack could be reduced to 240TB. |
| Are savings from lower power consumption important to you? | | Power Saving software and associated implementation services are available for AMS2000. Also AMS2000 SATA II drives automatically park the drive heads to save consumption and heat. This characteristic is provided by default in our SATA II drives with no additional cost or set-up time for the customer.<br><br>- Our systems have passed several environmental tests and regulations. The regulatory information is available on request. Additionally, **HDS has won the 2008 'Eco-Responsibility' Award with the AMS2500.** |
| Are you able to monitor capacity utilisation? | To measure efficiency and identify when capacity upgrades are required. | HDS offers a number of tools and strategies to help customers reduce costs by making more efficient use of their HDS (and non-HDS) storage assets.<br><br>One such tool is Hitachi Storage Capacity Reporter (HSCR). It's easy to install and use, and provides the customer with the necessary information regarding storage utilization across their HDS and heterogeneous storage environment. |

## Infrastructure

| QUESTION | LOOK FOR | HOW TO USE THE INFORMATION |
|---|---|---|
| Is your environment virtualised? | Server Virtualisation (e.g. VMware or Microsoft Hyper-V) | OLTP and Email applications are often the ones customers select to run in a virtualized environment, so the application-specific guidance above applies. |
| | Storage Virtualisation | |
| Do you require a tiered storage environment? | Assignment of different categories of data to different classes of storage to reduce cost whilst meeting performance and availability goals. | |
| Is High Availability a requirement for this system? | 7x24 application availability<br><br>Demanding Service Level Agreements (SLAs).<br><br>Concern about cost of outages. | |

## Backup & Archiving

| QUESTION | LOOK FOR | HOW TO USE THE INFORMATION |
|---|---|---|
| Are you aware that HDS provides archiving solutions? | Archiving | **Archiving** solutions from HDS enables long term preservation, optimisation and discovery of business critical digital unstructured content.<br><br>Hitachi's solution is based on the AMS2000 storage systems with data management capabilities provided by a combination of the Hitachi Content Archive Platform software and ISV-provided software (e.g. Symantec Enterprise Vault). |
| Are there any particular content types (email, documents,images, etc.) that you are required to archive? | Businesses need to access archived content for many reasons including regulatory or legal discovery purposes, normal operations, and even decision-support and business-intelligence purposes | The Hitachi Content Archive Platform is a highly scalable and open standards–based solution for long-term content preservation and high-performance access. It serves as a common platform for archiving all types of content, while enabling easy searches and immediate content discovery and retrieval when needed. |
| Do you require off-site replication? | Easy management is key for small and midsize customers.<br><br>Replication can be server based or storage based. Backup windows will define any additional solution you should consider. | Hitachi Replication Manager software provides management of Business Continuity and Disaster Recovery environments (in-system or off-site replication).<br><br>Synchronous and asynchronous copy, cloning and snapshot are all available with the AMS2000. Depending on the solution, more capacity will be required or an additional system for a remote site. The type of solution will depend on the application to be replicated, the backup windows, RPO and RTO (Recovery Point Objective / Recovery Time Objective).<br><br>Please review the following HDS white papers:<br>- **Protecting AMS2000 and Exchange environment with Continuous Replication**<br>- **Replication solutions for Hitachi Modular systems**<br>- **Optimized backup and recovery for Oracle databases.** |
| Do you want to use it for backup? | | The AMS2000 configured with SATA drives is ideal for disk-to-disk backup or disk-to-disk-to-tape.<br><br>All server-based backup applications like Hitachi Data Protection Suite and Symantec Backup Exec, as well as VTL applications etc. can use AMS2000 capacity. Also some products can be easy integrated with pre and post scripting to work seamlessly with AMS2000 cloning or snapshot solutions (Hitachi Shadow Image and Copy-on-Write). |



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# Sales Tools; AMS Application Solutions

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| | | | |
|---|---|---|---|
| **Customer concern:** | Using a reliable and highly available application platform that is easily scalable | | |
| **Solution areas:** | **Exchange** | **Oracle/SQL Databases** | **VMware** |
| **What HDS offers:** | Proven deployment and management of storage that is easily scalable to meet escalating demands in running **Exchange and Database** environments | | Easy to configure storage for **Server Farms.** **SRM** integration. Superior **ESX** multipathing. |
| **Running on:** | **Adaptable Modular Storage 2100, 2300 and 2500** | | |
| **And supported by:** | Reference Architectures, Best Practices, Deployment Guides, Monitoring and Managing Guides | | |

vmware

Microsoft GOLD CERTIFIED Partner

ORACLE PARTNER

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# Sales Tools; MS Exchange 2007

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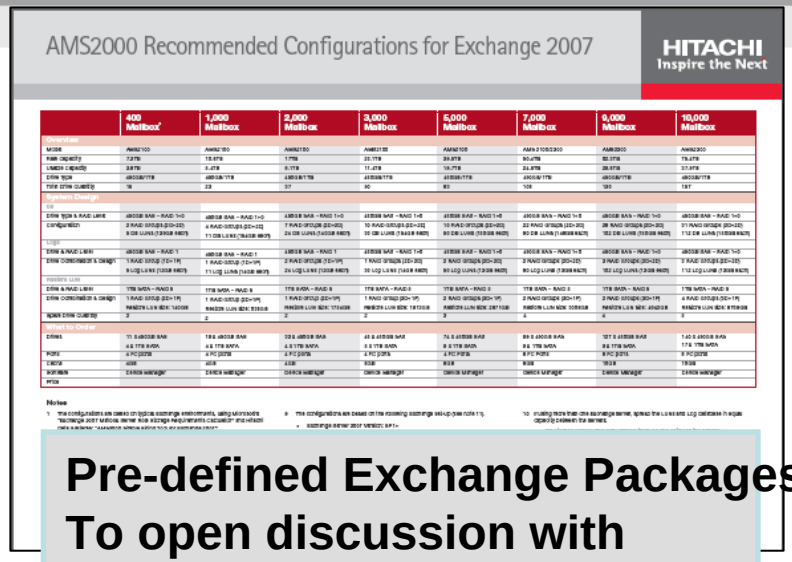
AMS2000 Recommended Configurations for Exchange 2007

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| | 400 Mailbox | 1,000 Mailbox | 2,000 Mailbox | 3,000 Mailbox | 5,000 Mailbox | 7,000 Mailbox | 9,000 Mailbox | 10,000 Mailbox |
|---|---|---|---|---|---|---|---|---|
| Overview | | | | | | | | |
| Model | AMS2100 | AMS2100 | AMS2100 | AMS2100 | AMS2100 | AMS 2100/2300 | AMS2300 | AMS2300 |
| Raw capacity | 7.3TB | 15.0TB | 17TB | 22.1TB | 29.8TB | 36.2TB | 52.3TB | 73.4TB |
| Usable capacity | 3.6TB | 5.4TB | 9.1TB | 11.4TB | 16.7TB | 24.8TB | 28.6TB | 37.6TB |
| Drive Type | 400GB/7TB | 400GB/7TB | 400GB/7TB | 400GB/7TB | 400GB/7TB | 400GB/7TB | 400GB/7TB | 400GB/7TB |
| Total Drive Quantity | 16 | 23 | 37 | 50 | 81 | 108 | 130 | 197 |
| Recovery Manager for Exchange | | | | | | | | |
| OS | | | | | | | | |
| Drive Type & RAID Level | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 |
| Configuration | 2 RAID GROUPS (2D+2D) 8 DB LUNS (536GB RAID) | 4 RAID GROUPS (2D+2D) 11 DB LUNS (536GB RAID) | 7 RAID GROUPS (2D+2D) 24 DB LUNS (536GB RAID) | 10 RAID GROUPS (2D+2D) 30 DB LUNS (536GB RAID) | 10 RAID GROUPS (2D+2D) 50 DB LUNS (536GB RAID) | 22 RAID GROUPS (2D+2D) 80 DB LUNS (536GB RAID) | 26 RAID GROUPS (2D+2D) 102 DB LUNS (536GB RAID) | 31 RAID GROUPS (2D+2D) 112 DB LUNS (536GB RAID) |
| Logs | | | | | | | | |
| Drive & RAID Level | 400GB SAS – RAID 1 | 400GB SAS – RAID 1 | 400GB SAS – RAID 1 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 | 400GB SAS – RAID 1+0 |
| Drive Combination & Design | 1 RAID GROUP (1D+1P) 8 LOG LUNS (536GB RAID) | 1 RAID GROUP (1D+1P) 11 LOG LUNS (536GB RAID) | 2 RAID GROUPS (1D+1P) 24 LOG LUNS (536GB RAID) | 1 RAID GROUPS (2D+2P) 30 LOG LUNS (536GB RAID) | 2 RAID GROUPS (2D+2P) 50 LOG LUNS (536GB RAID) | 2 RAID GROUPS (2D+2P) 80 LOG LUNS (536GB RAID) | 2 RAID GROUPS (2D+2P) 102 LOG LUNS (536GB RAID) | 3 RAID GROUPS (2D+2P) 112 LOG LUNS (536GB RAID) |
| Restore LUN | | | | | | | | |
| Drive & RAID Level | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 | 1TB SATA – RAID 6 |
| Drive Combination & Design | 1 RAID GROUP (2D+1P) RM2270 LUN SIZE: 1400GB | 1 RAID GROUP (2D+1P) RM2270 LUN SIZE: 2100GB | 1 RAID GROUP (2D+1P) RM2270 LUN SIZE: 1751GB | 1 RAID GROUP (3D+1P) RM2270 LUN SIZE: 1751GB | 2 RAID GROUPS (3D+1P) RM2270 LUN SIZE: 2813GB | 2 RAID GROUPS (3D+1P) RM2270 LUN SIZE: 3280GB | 2 RAID GROUPS (3D+1P) RM2270 LUN SIZE: 4042GB | 4 RAID GROUPS (3D+1P) RM2270 LUN SIZE: 4788GB |
| Spare Drive Quantity | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 |
| Software Required | | | | | | | | |
| Drives | 11 400GB SAS 4 1TB SATA | 16 400GB SAS 4 1TB SATA | 33 400GB SAS 4 1TB SATA | 45 400GB SAS 5 1TB SATA | 74 400GB SAS 8 1TB SATA | 99 400GB SAS 8 1TB SATA | 127 400GB SAS 8 1TB SATA | 140 400GB SAS 17 1TB SATA |
| Ports | 4 FC PORTS | 4 FC PORTS | 4 FC PORTS | 4 FC PORTS | 4 FC PORTS | 8 FC PORTS | 8 FC PORTS | 8 FC PORTS |
| Cache | 4GB | 4GB | 4GB | 8GB | 8GB | 8GB | 16GB | 16GB |
| Software | Device Manager | Device Manager | Device Manager | Device Manager | Device Manager | Device Manager | Device Manager | Device Manager |
| RPSS | | | | | | | | |

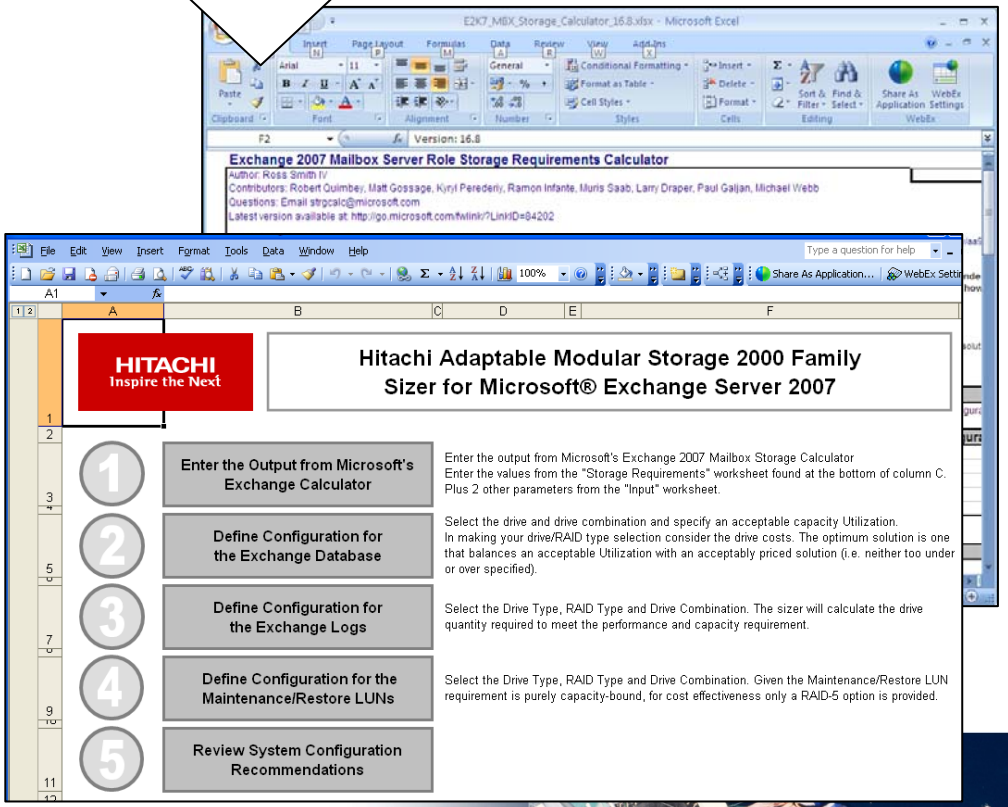
Notes

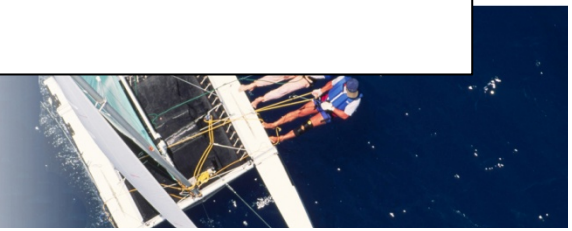
1. The configurations are based on typical exchange environments, using Microsoft's "Exchange 2007 Mailbox Server Role Storage Requirements Calculator" and Hitachi Data Systems "Exchange Mailbox Server Role Storage Requirements Calculator" and Hitachi Data Systems "Advanced Sizing Utility for Exchange 2007".
2. The configurations are based on the following exchange set-up (see note 11).
   - exchange server jbod version: SP1+
10. If using more than one exchange server, spread the Log and Database in equal capacity between the servers.

**Pre-defined Exchange Packages:**
**To open discussion with a tangible offering**

## Microsoft & HDS Sizing Tools

- **For tailored configurations**



# AMS2000 Recommended Configurations for Exchange 2007

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| | 400 Mailbox[5] | 1,000 Mailbox | 2,000 Mailbox | 3,000 Mailbox | 5,000 Mailbox | 7,000 Mailbox | 9,000 Mailbox | 10,000 Mailbox |
|---|---|---|---|---|---|---|---|---|
| **Overview** | | | | | | | | |
| Model | AMS2100 | AMS2100 | AMS2100 | AMS2100 | AMS2100 | AMS 2100/2300 | AMS2300 | AMS2300 |
| Raw Capacity | 7.3TB | 10.8TB | 17TB | 23.1TB | 39.5TB | 50.4TB | 62.3TB | 75.4TB |
| Usable Capacity | 3.8TB | 5.4TB | 8.1TB | 11.4TB | 19.7TB | 24.5TB | 29.8TB | 37.9TB |
| Drive Type | 450GB/1TB | 450GB/1TB | 450GB/1TB | 450GB/1TB | 450GB/1TB | 450GB/1TB | 450GB/1TB | 450GB/1TB |
| Total Drive Quantity | 15 | 23 | 37 | 50 | 83 | 108 | 136 | 157 |
| **System Design** | | | | | | | | |
| Db | | | | | | | | |
| Drive Type & RAID Level | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 |
| Configuration | 2 RAID Groups (2D+2D)<br>5 DB LUNs (135GB each) | 4 RAID Groups (2D+2D)<br>11 DB LUNs (154GB each) | 7 RAID Groups (2D+2D)<br>24 DB LUNs (140GB each) | 10 RAID Groups (2D+2D)<br>33 DB LUNs (154GB each) | 16 RAID Groups (2D+2D)<br>56 DB LUNs (150GB each) | 22 RAID Groups (2D+2D)<br>80 DB LUNs (145GB each) | 28 RAID Groups (2D+2D)<br>102 DB LUNs (150GB each) | 31 RAID Groups (2D+2D)<br>112 DB LUNs (150GB each) |
| Logs | | | | | | | | |
| Drive & RAID Level | 450GB SAS – RAID 1 | 450GB SAS – RAID 1 | 450GB SAS – RAID 1 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 | 450GB SAS – RAID 1+0 |
| Drive Combination & Design | 1 RAID Group (1D+1P)<br>5 Log LUNs (12GB each) | 1 RAID Group (1D+1P)<br>11 Log LUNs (14GB each) | 2 RAID Groups (1D+1P)<br>24 Log LUNs (12GB each) | 1 RAID Groups (2D+2D)<br>33 Log LUNs (14GB each) | 2 RAID Groups (2D+2D)<br>56 Log LUNs (13GB each) | 2 RAID Groups (2D+2D)<br>80 Log LUNs (13GB each) | 3 RAID Groups (2D+2D)<br>102 Log LUNs (13GB each) | 3 RAID Groups (2D+2D)<br>112 Log LUNs (13GB each) |
| Restore LUN | | | | | | | | |
| Drive & RAID Level | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 | 1TB SATA – RAID 5 |
| Drive Combination & Design | 1 RAID Group (2D+1P)<br>Restore LUN size: 140GB | 1 RAID Group (2D+1P)<br>Restore LUN size: 638GB | 1 RAID Group (2D+1P)<br>Restore LUN size: 1754GB | 1 RAID Group (3D+1P)<br>Restore LUN size: 1913GB | 2 RAID Groups (3D+1P)<br>Restore LUN size: 2871GB | 2 RAID Groups (3D+1P)<br>Restore LUN size: 3060GB | 2 RAID Groups (3D+1P)<br>Restore LUN size: 4642GB | 4 RAID Groups (3D+1P)<br>Restore LUN size: 6769GB |
| Spare Drive Quantity | 2 | 2 | 2 | | | | | |
| **What to Order** | | | | | | | | |
| Drives | 11 x 450GB SAS<br>4 x 1TB SATA | 19 x 450GB SAS<br>4 x 1TB SATA | 33 x 450GB SAS<br>4 x 1TB SATA | | | | | |
| Ports | 4 FC ports | 4 FC ports | 4 FC ports | | | | | |
| Cache | 4GB | 4GB | 4GB | | | | | |
| Software | Device Manager | Device Manager | Device Manager | | | | | |
| Price | | | | | | | | |

## Pre-defined Exchange Packages

- **Open discussion with a tangible offering**
- **Based on assumptions of Customers own Exchange environment**
- **Next Steps: Engage Exchange specialist to review specific needs.**
- **Use Microsoft & HDS Tools**

### Notes

1 The configurations are based on typical Exchange environments, using Microsoft's "Exchange 2007 Mailbox Server Role Storage Requirements Calculator" and Hitachi Data Systems' "AMS2000 Simple Sizing Tool for Exchange 2007"

2 Both the Exchange performance and capacity requirements are considered with the best practise guidance from Microsoft and lab testing by Hitachi Data Systems.

3 Utilisation of each disk tray is optimised where possible.

4 Configurations offer approx.75% capacity utilisation, allowing 25% for future growth

5 The 400 Mailbox configuration is the minimum configuration given the RAID types used.

6 Usable capacity in defined to "Base 2" (i.e. 1TB = 1024GB, not 1000GB).

7 The designs assume the storage system will be used solely for Exchange.

8 For 99.999% availability, ensure all drives are SAS (i.e. substitute the SATA drives used for the Restore LUN with SAS drives). Use the sizing tools referred to in note 11.

9 The configuration

- Exchange Se
- High Availabi
- Send/Receiv
- Average Mes
- Tier-1 User M
- Outlook Mod
- No Blackberr

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# Sales Tools; MS Exchange 2007 Storage Calculator

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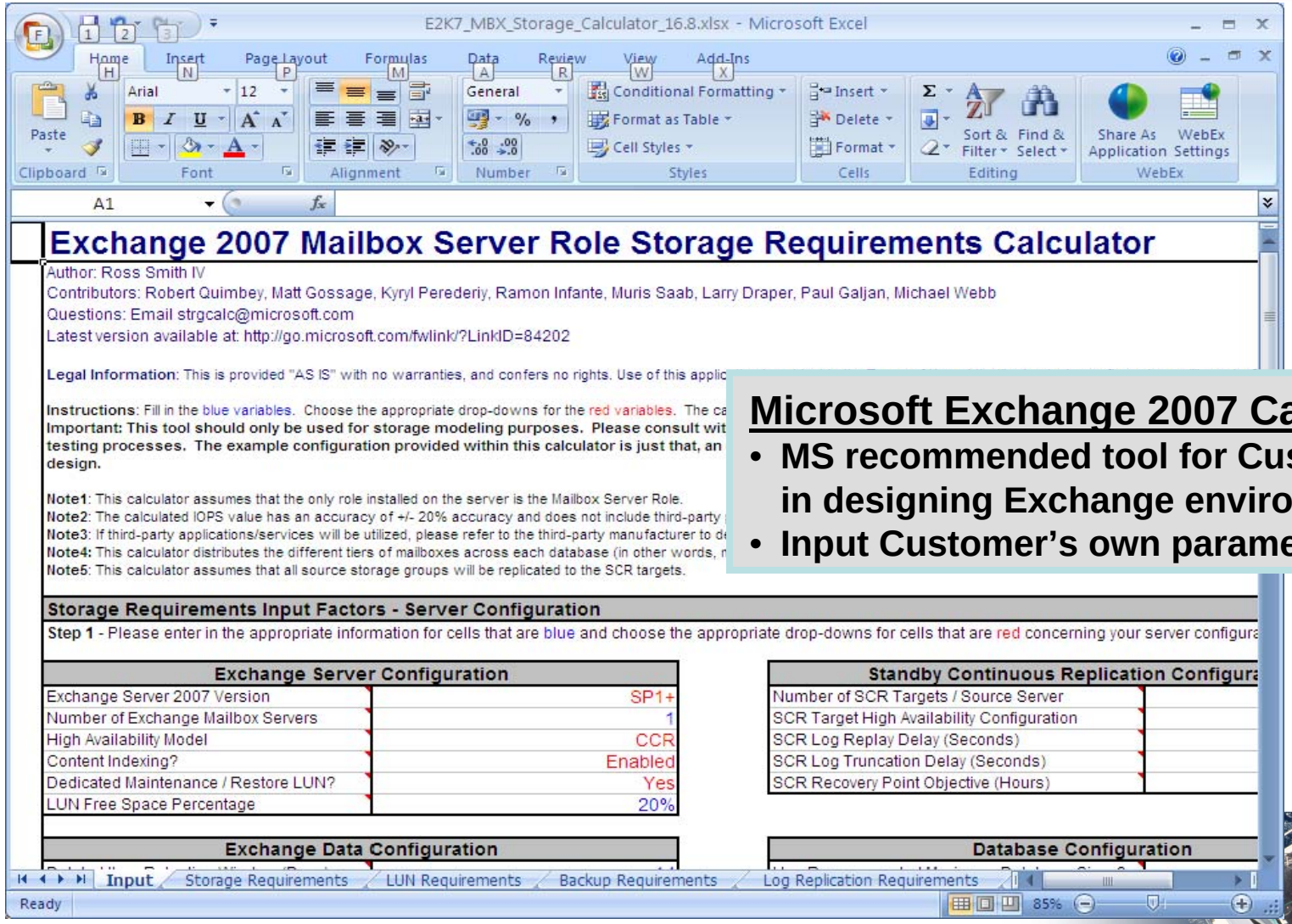


## Microsoft Exchange 2007 Calculator

- **MS recommended tool for Customers and VARs in designing Exchange environments.**
- **Input Customer's own parameters**

# Sales Tools; AMS Sizer for Exchange Server 2007

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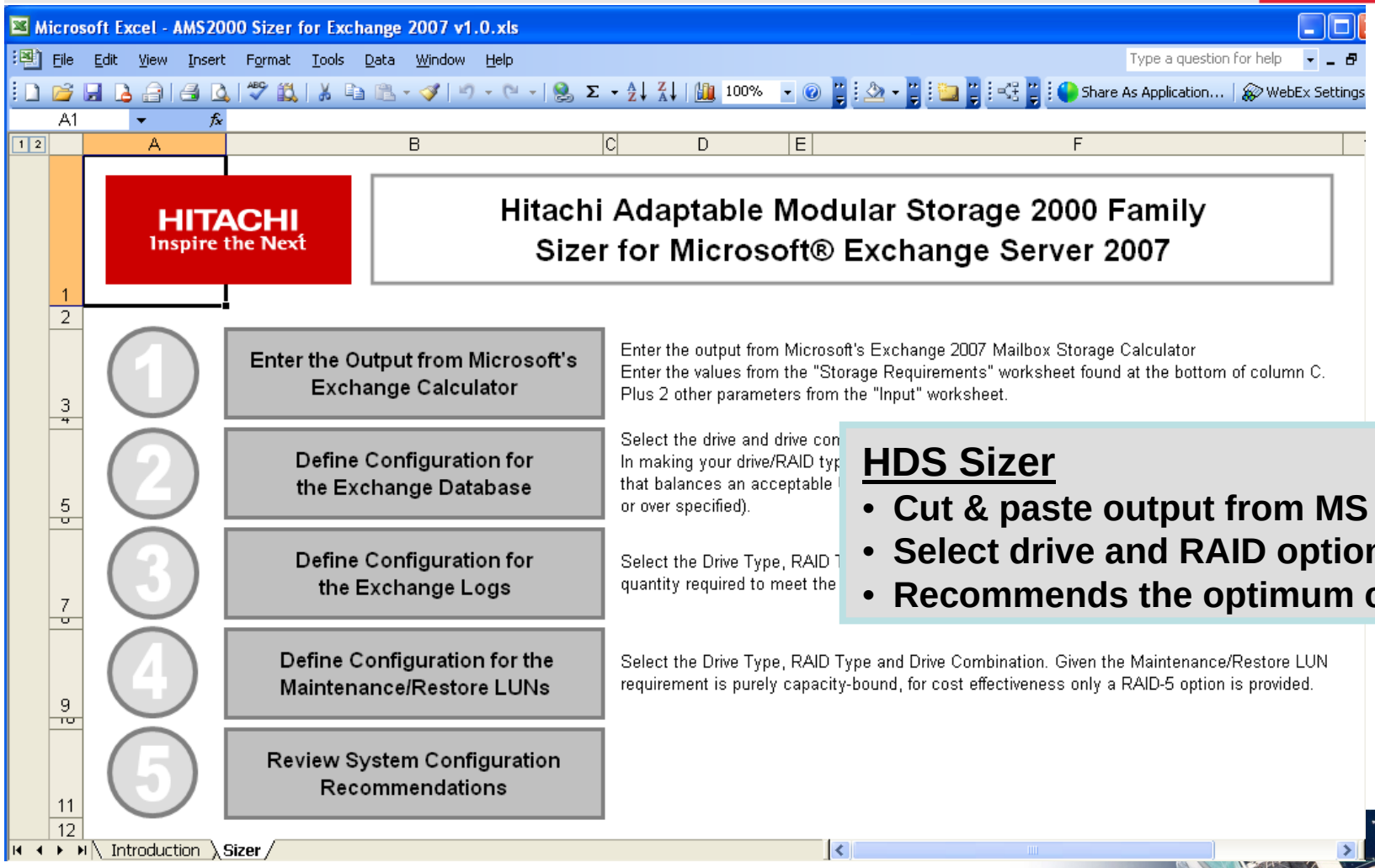
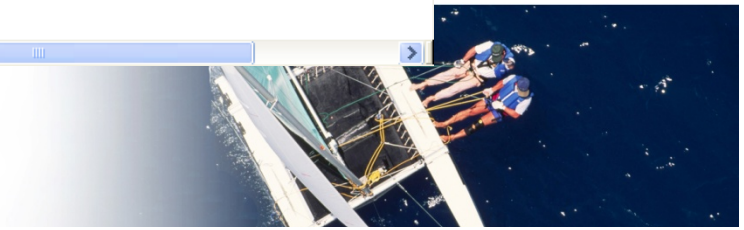



## HDS Sizer

- **Cut & paste output from MS Calculator**
- **Select drive and RAID options**
- **Recommends the optimum configuration**



# Sales Tools; Detailed Planning Guide

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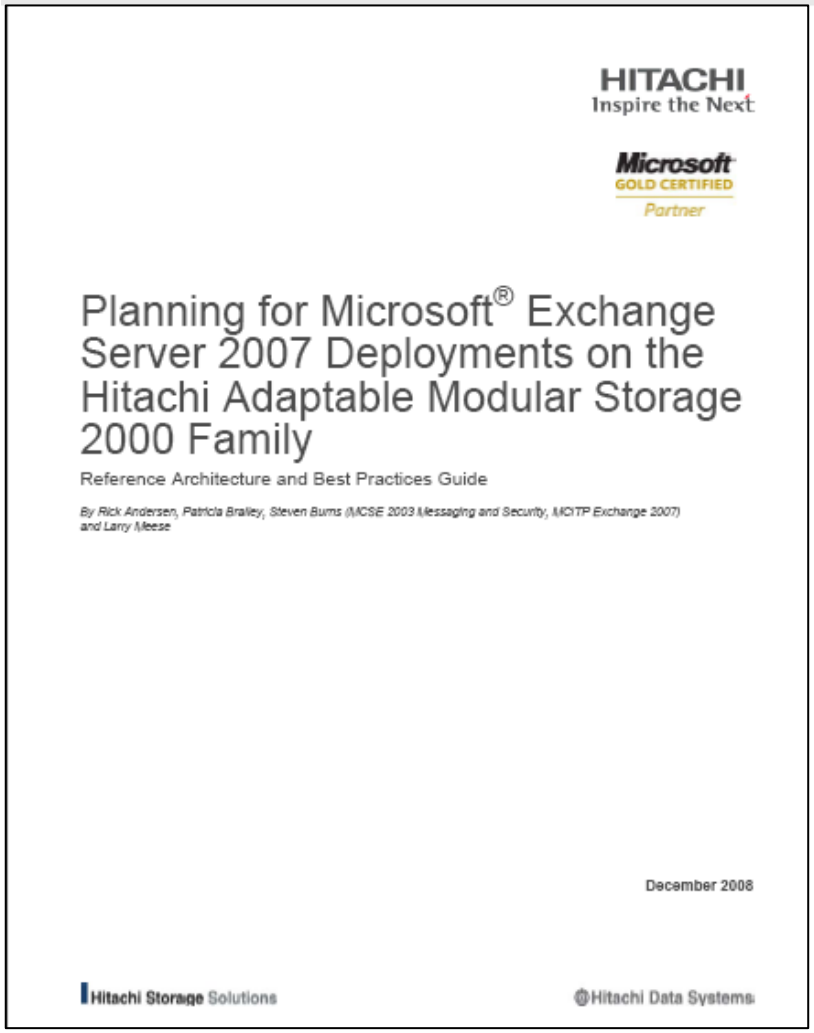


**36 Page Planning Guide**

- **Use with, or independently of, other sales tools**
- **Best practice guidance**
- **Reference Architecture**
- **Perfect for fully customised solutions**

# Best in class SPC-1 Benchmark results

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| | Hitachi Data Systems | | | IBM | | | NetApp | EMC |
|---|---|---|---|---|---|---|---|---|
| Model | Adaptable Modular Storage 2100 | Adaptable Modular Storage 2300 | Adaptable Modular Storage 2500 | DS4300 | DS4800 | DS5300 | FAS3040 | CX-3 Ultrascale 40 |
| Controller Type | Active-Active | Active-Active | Active-Active | Active-Passive | Active-Passive | Active-Passive | Active-Passive | Active-Passive |
| SPC-1 IOPS | 31,498.58 | 42,502.61 | 89,491.81 | 12,102.97 | 45,014.81 | 62,244.00 | 30,992.39 | 24,997.49 |
| Price/Performace | $5.85/SPC-1 IOPS | $6.96/SPC-1 IOPS | $6.71/SPC-1 IOPS | $11.07/SPC-1 IOPS | $13.94/SPC-1 IOPS | $11.76/SPC-1 IOPS | $13.58/SPC-1 IOPS | $20.72/SPC-1 IOPS |
| SPC-1 Sustainability Rate (Throughput MB/s) | 258MB/s | 350MB/s | 735MB/s | 99.5MB/s | 370MB/s | 510MB/s | 260MB/s | 205MB/s |
| Average Response Time (10% Load Point) | 1.83ms | 1.88ms | 2.10ms | 2.07ms | 2.15ms | 1.75ms | 2.86ms | 4.34ms |
| Average Response Time (50% Load Point) | 2.67ms | 2.70ms | 2.88ms | 4.21ms | 3.26ms | 2.95ms | 5.27ms | 6.72ms |
| Average Response Time (80% Load Point) | 4.80ms | 4.05ms | 5.02ms | 7.96ms | 5.24ms | 4.41ms | 9.65ms | 11.79ms |
| Average Response Time (100% Load Point) | 8.15ms | 6.33ms | 8.98ms | 21.09ms | 15.39ms | 14.37ms | 22.32ms | 24.12ms |

- In SPC-1 benchmark testing, the Hitachi Adaptable Modular Storage 2500 achieved the highest throughput results among all midrange storage competitors with dual controllers.
- With an impressive throughput result of 89,491.81 SPC-1 IOPS™ and an 8.98 millisecond average response time, the Adaptable Modular Storage 2500 provides the best performance and response times for key business applications such as Microsoft Exchange, SQL, Oracle, SAP or any other online transactional processing application, allowing users to more effectively scale their workloads at a best-in-class price point.
- The Hitachi Adaptable Modular Storage 2100 achieved among the best SPC-1 Price-Performance ratio in its class at $5.95/SPC-1 IOPS™, bringing high performance to a new affordable price level and allowing customers to realize a lower total cost of ownership.
- This price-performance ratio reiterates Hitachi's continued efforts to help customers establish a path towards optimizing their storage environment, resulting in greater return on their storage asset investments and lower overall power and cooling consumption.

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# Sales Tools; Marketing Collateral

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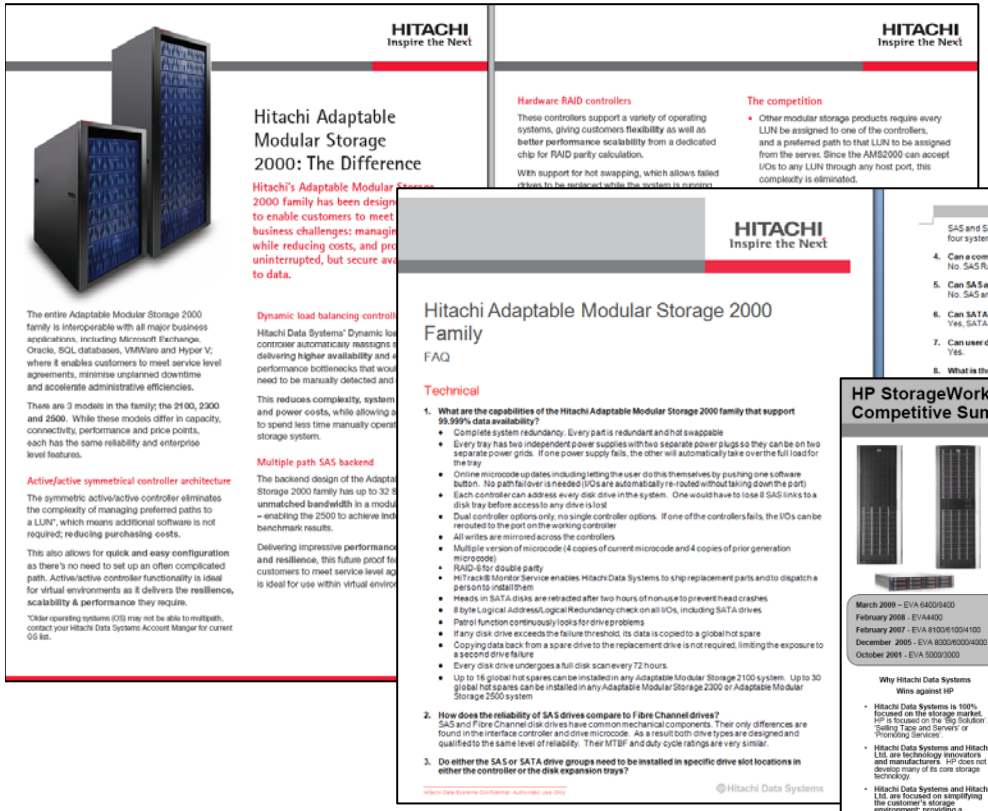

Hitachi Adaptable Modular Storage 2000: The Difference

Hitachi Adaptable Modular Storage 2000 Family

FAQ

Technical

HP StorageWorks EVA Competitive Summary

HP StorageWorks EVA/MSA Competitive Summary

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# AMS 2000 'What the papers say'

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The Hitachi Adaptable Modular System 2500 has won the Eco-Responsibility Award in this year's Information Age Innovation Awards, beating out stiff competition.

InformationAge AWARDS WINNER ~ Green IT Innovation

STORAGE PRODUCTS OF THE YEAR

The Hitachi Adaptable Modular Storage (AMS) Series 2000 was selected by the editors of TechTarget's SearchStorage.com as a Bronze Award Winner its annual "Storage Products of the Year" …in the disk, disk subsytems category.

Gartner positioned Hitachi & the Hitachi AMS2000 family in its Magic Quadrant…"this quadrant reflects highest scores for their ability to execute and completeness of vision…they are innovators…with a clear understanding of market needs" – Nov 17, 2008

Gartner

QUALITY AWARDS · DIOGENES LABS AND STORAGE MAGAZINE

Hitachi achieves overall best-in-class Storage Performance Council (SPC-1™) benchmark results for its midrange storage system (Hitachi AMS2000). March 24, 2009

"With the AMS, I actually think a layperson could use it. I think that's how easy it is; it's really a point and click deal." – Matthew Colona, IT Manager at Pite Duncan LLP (Storage Magazine, March 2009

"The AMS2000 series combination of enterprise class features with easy to manage midrange usability and reduced operational costs is powerful and worthy of serious consideration by an IT organization. "

ESG Enterprise Strategy Group

Hitachi Data Systems has consolidated its claim as the top-rated high-end array vendor by *repeating its win*..."- Rich Castagna, Editor

Hitachi Data Systems

# AMS 2000 Promotions

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## Click here to find out what makes our AMS range unique

**Due to overwhelming demand, Hitachi Data Systems is pleased to announce that we will be extending our popular Adaptable Modular Storage Capital Bonds and extra margin promotion until the end of September. Furthermore, we are offering a substantially improved buy price for the configurations!**

The four configurations below have been specially designed for this promotion; offering an impressive margin opportunity, but that is just the beginning! With all of these bundles you also get an exclusive chance to earn yourself Capital Bonds.

With over 140 retailers to choose from, you can spend your Capital Bonds on anything from computer games to clothes! Or put them towards a holiday or gift experience such as kite boarding or scuba diving.

**This offer is available until 30th September 2009 and only available to partners buying from Bell Microproducts or Zycko Ltd. To take advantage of this special offer all opportunities must be registered and accepted through the PartnerXchange opportunity registration portal.**

**Here are the 4 available configurations:**

| Adaptable Modular Storage Configurations | Reseller Buy Price | Suggested Customer Price | Capital Bonds Earned |
|---|---|---|---|
| 2100 SATA, 12x1TB 7.2K Drives, 8GB Cache, 36 months 24x7x4hr support, Storage Navigator S/W and install. | £14,300 | £15,770 | £1,000 |
| 2100 SAS, 12 x 450GB 15K Drives, 8GB Cache, 36 months 24x7x4hr support, Storage Navigator S/W and install. | £15,650 | £17,215 | £1,500 |
| 2300 SATA, 12x1TB 7.2K Drives, 8GB Cache, 36 months 24x7x4hr support, Storage Navigator S/W and install. | £20,000 | £22,000 | £2,000 |
| 2300 SAS, 12 x 450GB 15K Drives, 8GB Cache, 36 months 24x7x4hr support, Storage Navigator S/W and install. | £21,600 | £23,760 | £2,500 |

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## Switch to Hitachi Data Systems and let us do all the work

Dear [customer]

Are you looking for a new storage solution, but don't have the resources to deal with such a time-consuming task?

Physically disposing of the old system can be difficult. Even though you can see the benefits, dealing with the legal requirements for safe and legal data transfer, and the decommissioning of old machines can be extremely time complex. Fortunately, Hitachi Data Systems can help.

### Introducing the new Hitachi Data Systems Storage Buy-back Programme

Switch to an Adaptable Modular Storage solution from Hitachi Data Systems to take advantage of their **Storage Buy-back Programme**. Not only will they arrange for your old system to be removed, they'll dispose of it safely and securely, while working through the time-consuming legal and administrative formalities.

What's more, you'll benefit from **trade-in values of up to €6000** on the purchase price of our range of Hitachi Adaptable Modular Storage solutions. This includes the recently launched Hitachi Adaptable Modular Storage 2000 family: highly reliable and cost effective modular storage for organisations of all sizes. Allowing you to benefit from:

- **Advanced capabilities** – certified and tested with the leading business applications
- **An easy-to-use management interface** – for extensive scalability and outstanding system reliability
- **Cost-effective performance and non-disruptive operations** – helping you concentrate on key business goals

Hitachi Adaptable Modular Storage solutions already deliver the best price/performance, availability and scalability in the modular storage market place. And now, with the efficient Hitachi Data System Storage Buy-back Programme, they're an even more attractive proposition.

## [CTA - tailored by each reseller so they can add their own]

Kind regards

**[reseller name]**

Partner Logo

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# Questions / Discussion

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# HDS UK Partner Day 2009

## Modular Solutions

Thursday 9th July 2009

**David Parker**
**Territory Account Manager**

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# Integrated Scaleable Storage Portfolio

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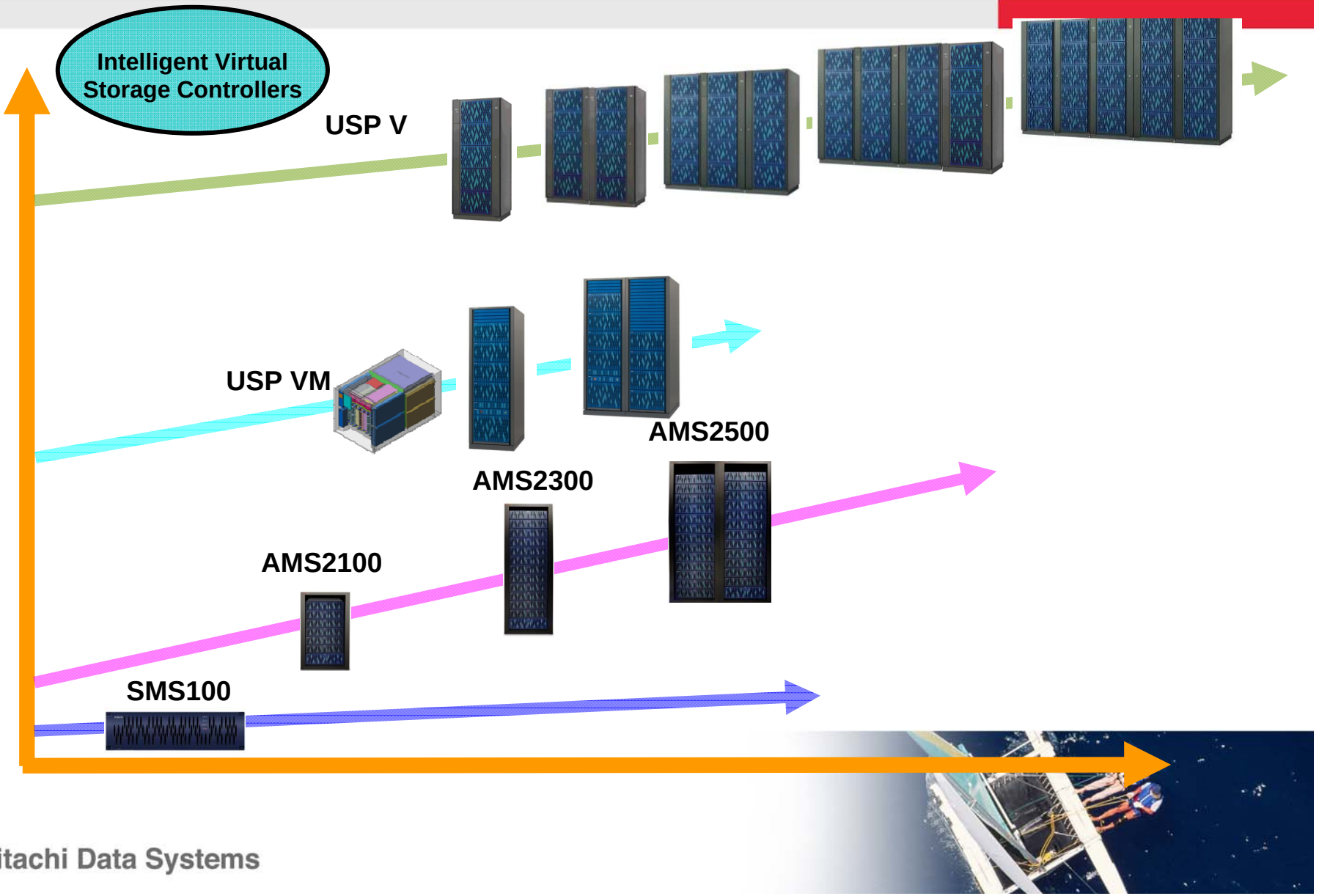

# Integrated Scaleable Storage Portfolio

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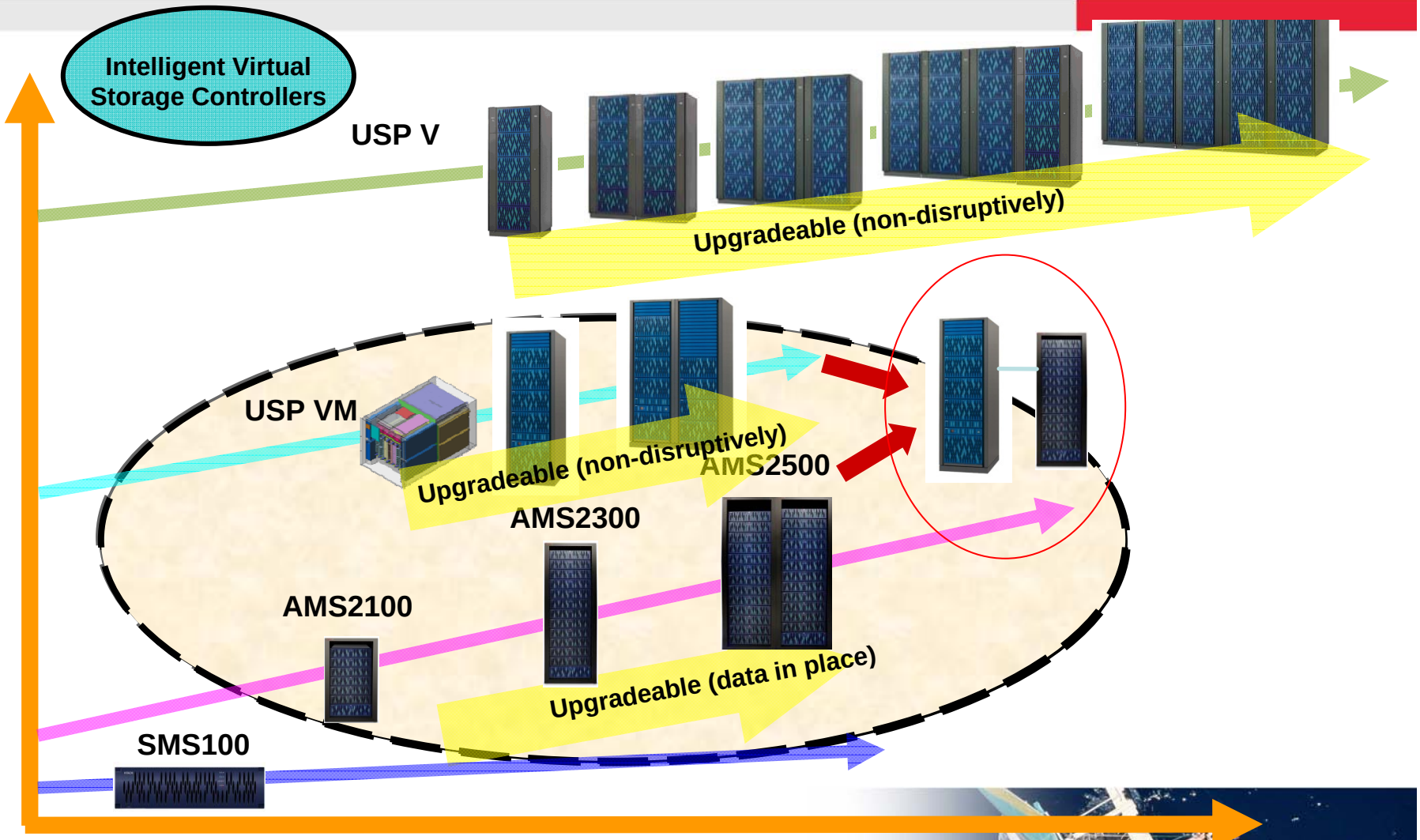


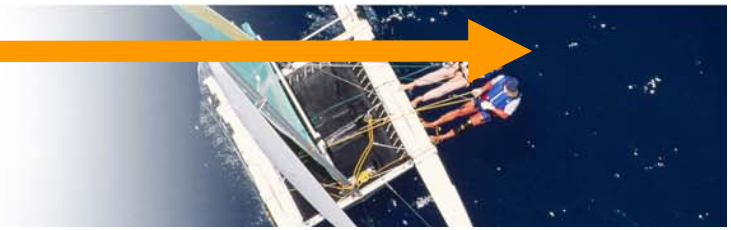

# Adaptable Modular Storage
## *Customer Case Studies*

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Victoria and Albert Museum

Public Sector: The Arts

NORWICH UNION
an AVIVA company

Insurance

Bradford and Airedale NHS
Teaching Primary Care Trust

Health Care

e·on | IS

Utilities

CONWY
CYNGOR BWRDEISTREF SIROL
COUNTY BOROUGH COUNCIL

Local Government

ROTHSCHILD

Financial

BT
Bringing it all together

Telecommunications

FORSTERS

Legal

Jubilee International High School

Education

nls
National Library of Scotland

Government: Public Sector Services

NISSAN

Manufacturing: Automotive

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# Adaptable Modular Storage 2000
## *Upcoming Customer Case Studies*

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NHS Derwent Shared Services

Derwent Shared Services

Health Care

EDF Energy

Utilities

wrexham COUNTY BOROUGH COUNCIL CYNGOR BWRDEISTREF SIROL wrecsam

Wrexham County Borough Council

Local Government

Zen Internet Limited

Zen Internet

IT Services

LANCASTER UNIVERSITY

Lancaster University

Education

MARKS & SPENCER

Marks & Spencer

Retail

CAPSTONE ▪ *Mortgage Services*

Capstone Mortgages Services

Financial Services

INFLIGHT PRODUCTIONS

Inflight Productions

Media

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**Confidential: For internal use only**

# HDS Territory Account Managers

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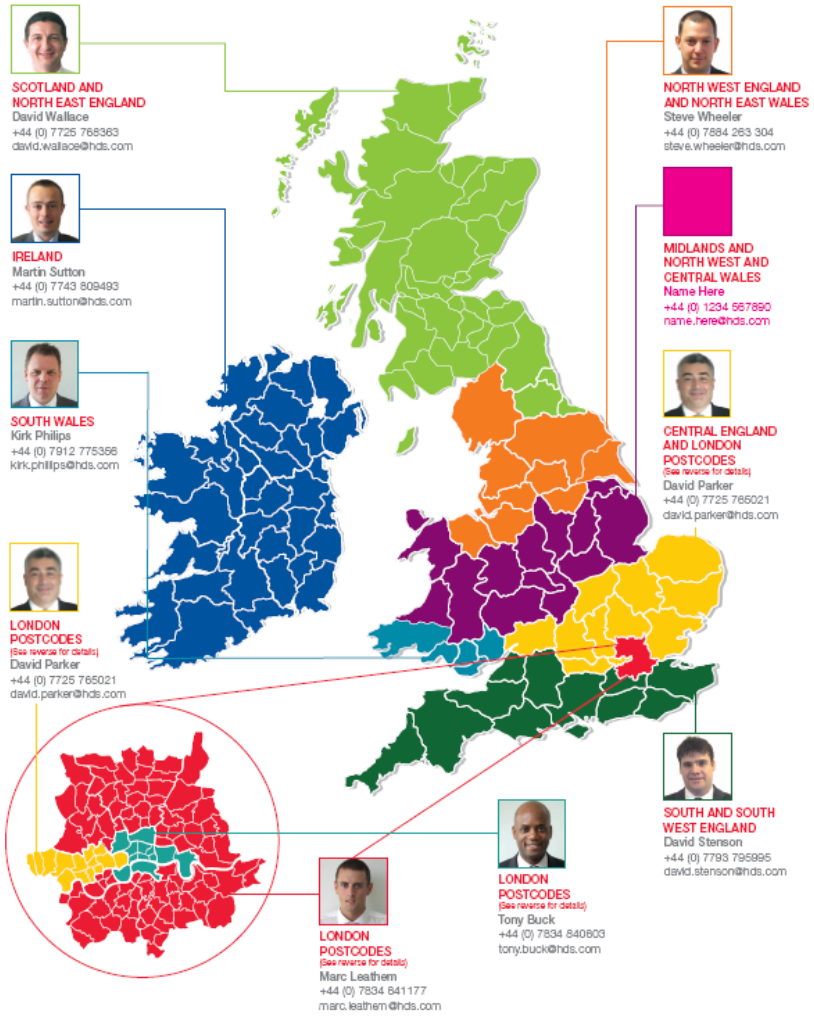
## Hitachi Data Systems Commercial Territory Account Managers

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# Thank you

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# Hitachi File and Content Services

## Understanding, Rationalising and Better Managing your Information

***Jez Hoppe, Solutions Consultant***

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# Irrational Data Growth

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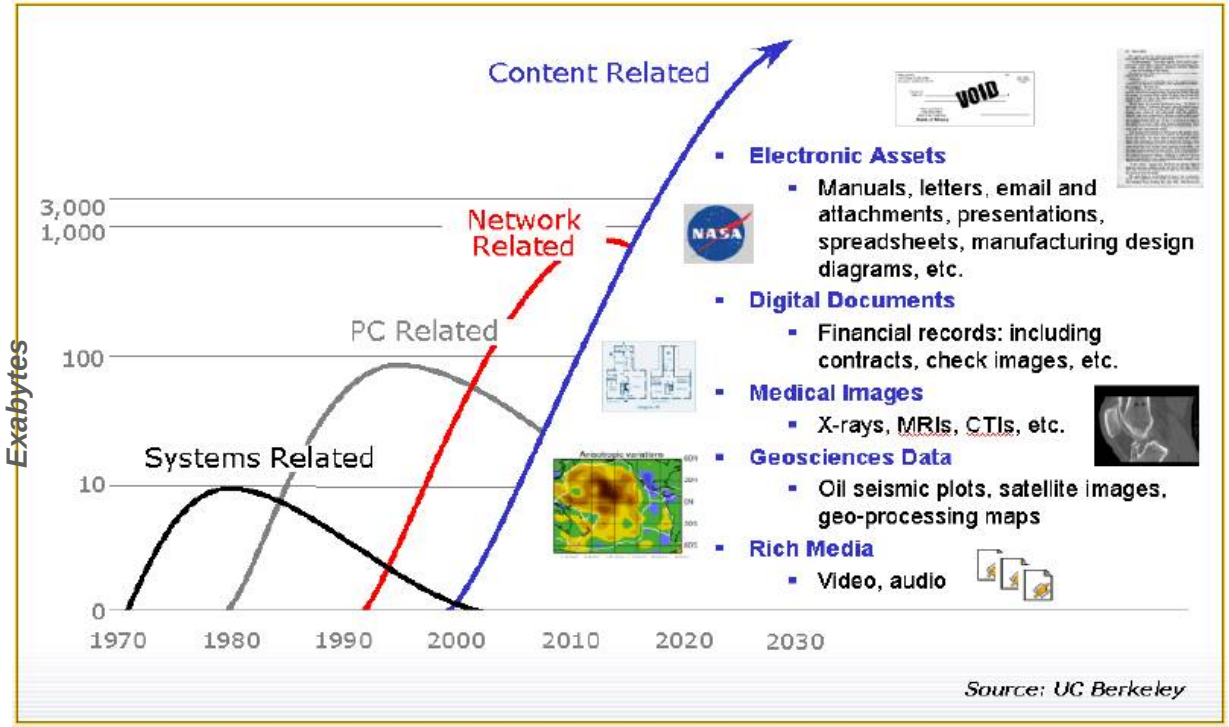
- **Unstructured content growing faster than traditional information or structured content**
  - **Database or transactional data**
- ***75% to 90% of data is unstructured***
  - ***Requires unique capabilities for archive management***





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# Key Drivers for Businesses to deploy an Archive?

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- Improve Data Management

- Enhance Value of Data /Information

- Regulatory Compliance / Corporate Governance

- E-Discovery / Search

# Information Asset Diagnostics and Migration Platform

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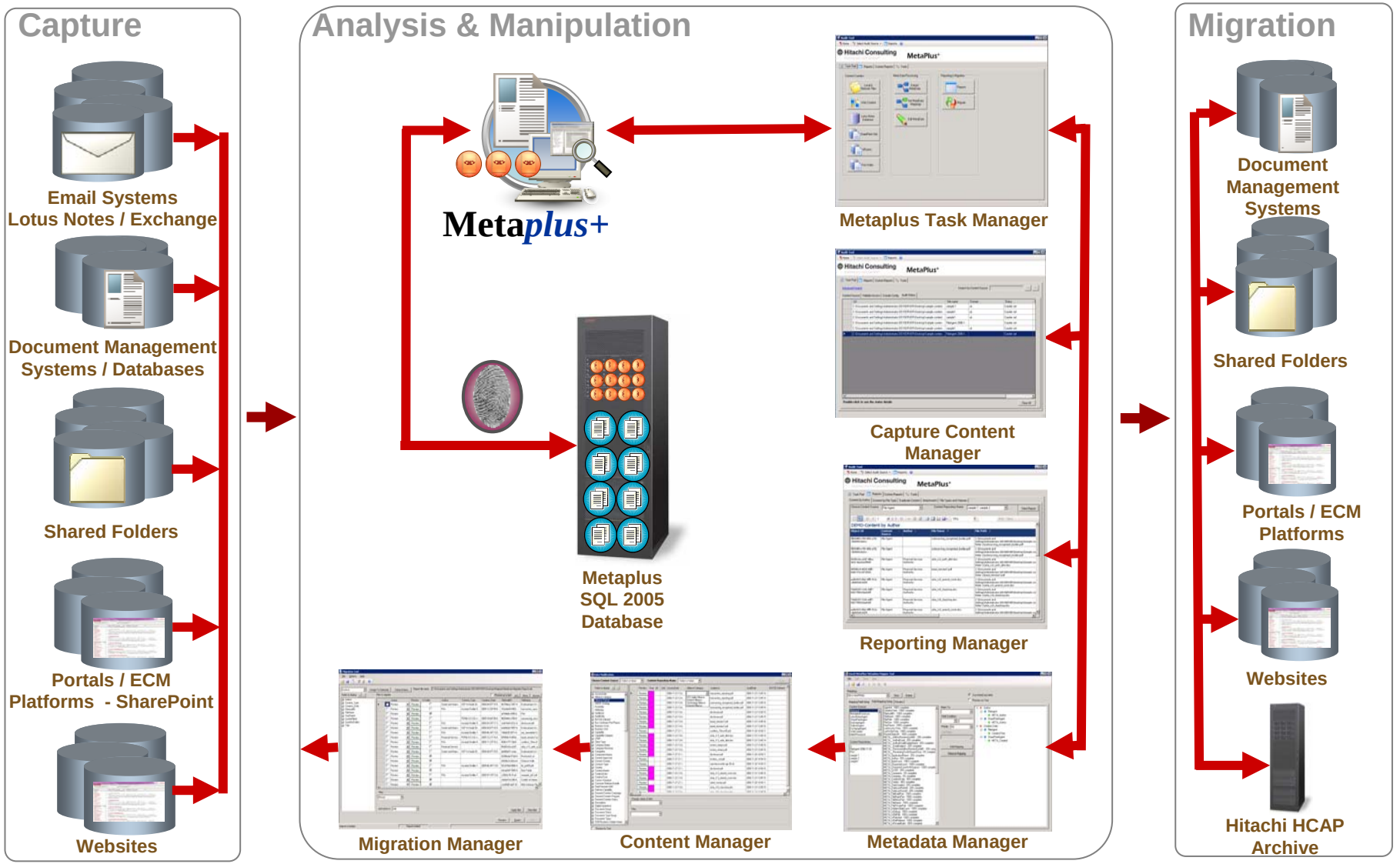




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# HDS MetaPlus Diagnostics – Sample Output

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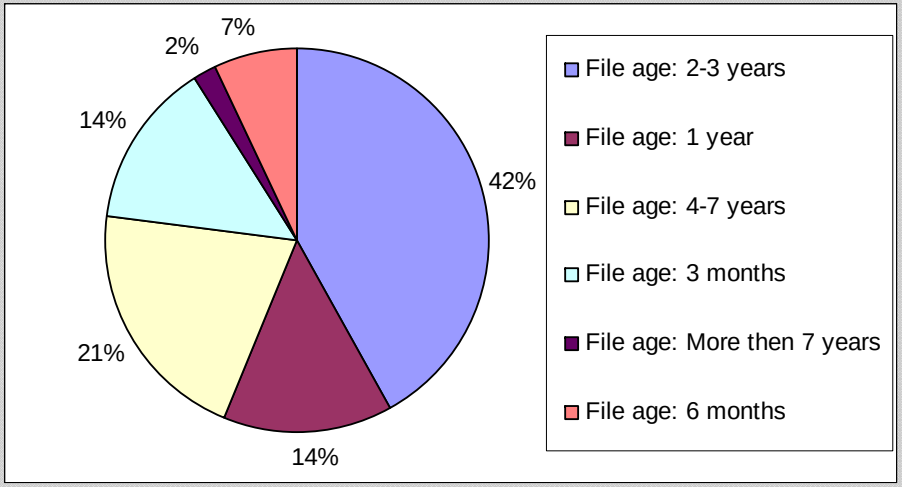
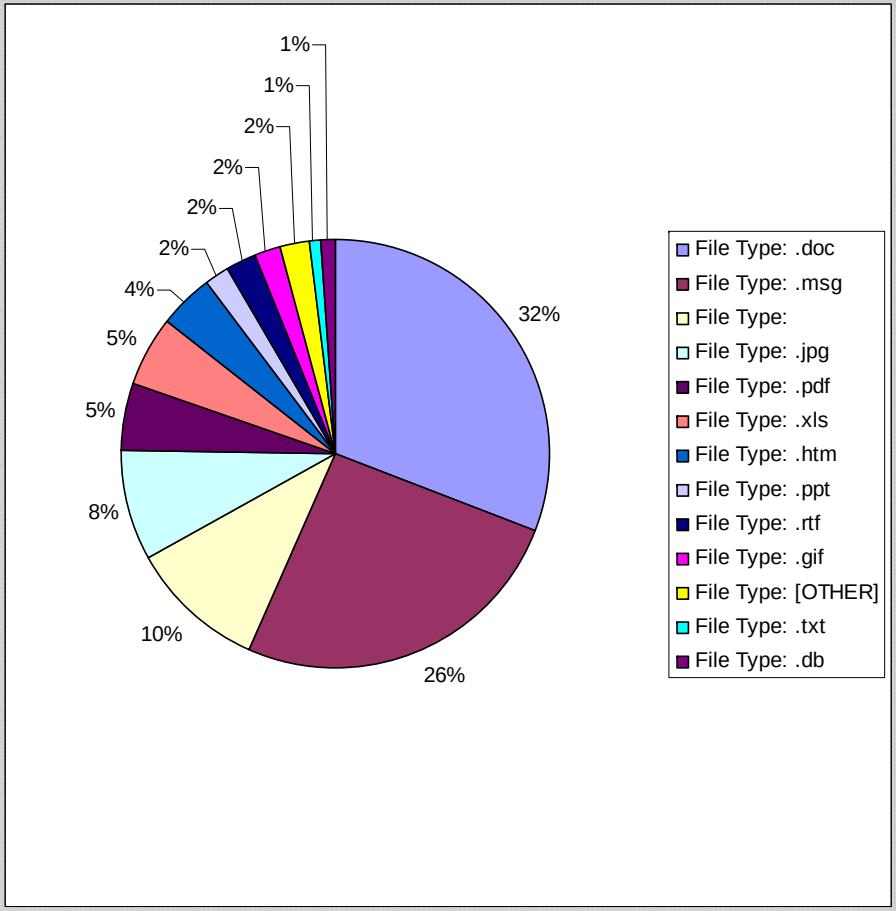
**5 TB Shared Folder stored on T1**

## Age of Content




## Content Types




## % Duplications Identified:

**14%**



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# HDS MetaPlus – Sample Output

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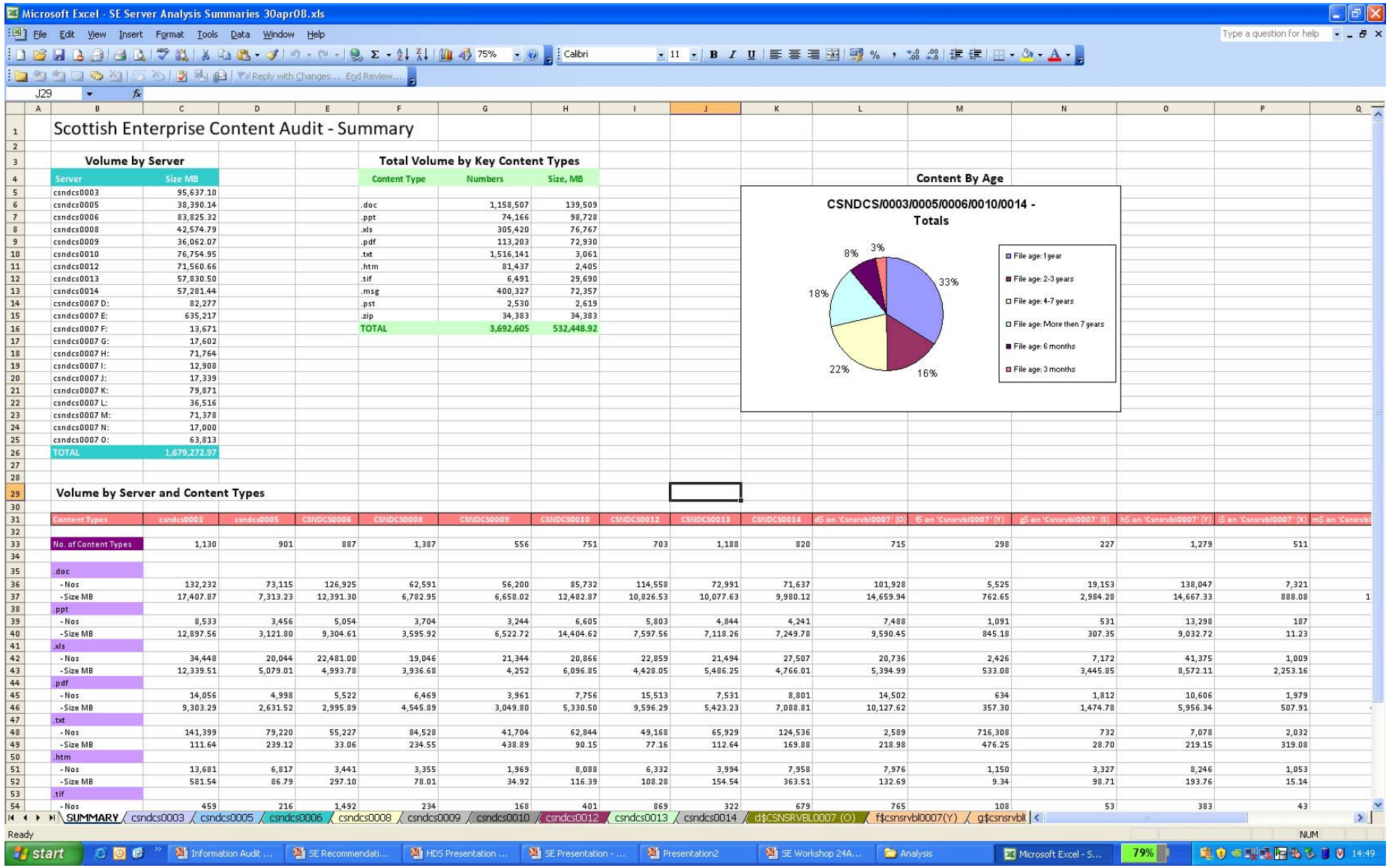




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# Information Diagnostics and Migration - Metaplus+ Key Features

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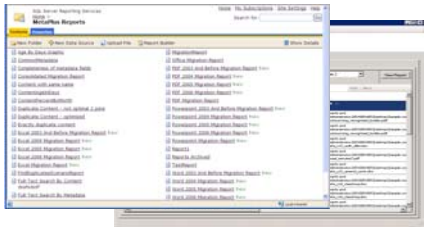
**Analyse** existing content
- Email
- Web Pages
- Office Documents
- PDF's , Images
- Databases

Identify **duplicate Data /** content

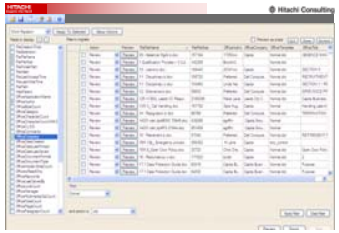
**Identify** and **'Cleaning-up'** out-of-date Data / content efficiently

**Identify** Data / Content for archiving



Obtain **management reports** accessible through an executive dashboard interface

Running **structured BI** queries on **unstructured** content



**Manipulate** metadata and data / content structure through an intuitive interface

Application of **Enterprise Taxonomy**

Metaplus+

**Providing Plug-ins** to enable the migration of content to an Archive.

**Improving** your Data **/ Content quality**

**Improving Enterprise Search**

**Impact** analysis of **Data / Content Management Policy** changes

**Creation** of **Data / Content rationalisation and archiving** strategies and solutions



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# Hitachi Content Archive Platform:

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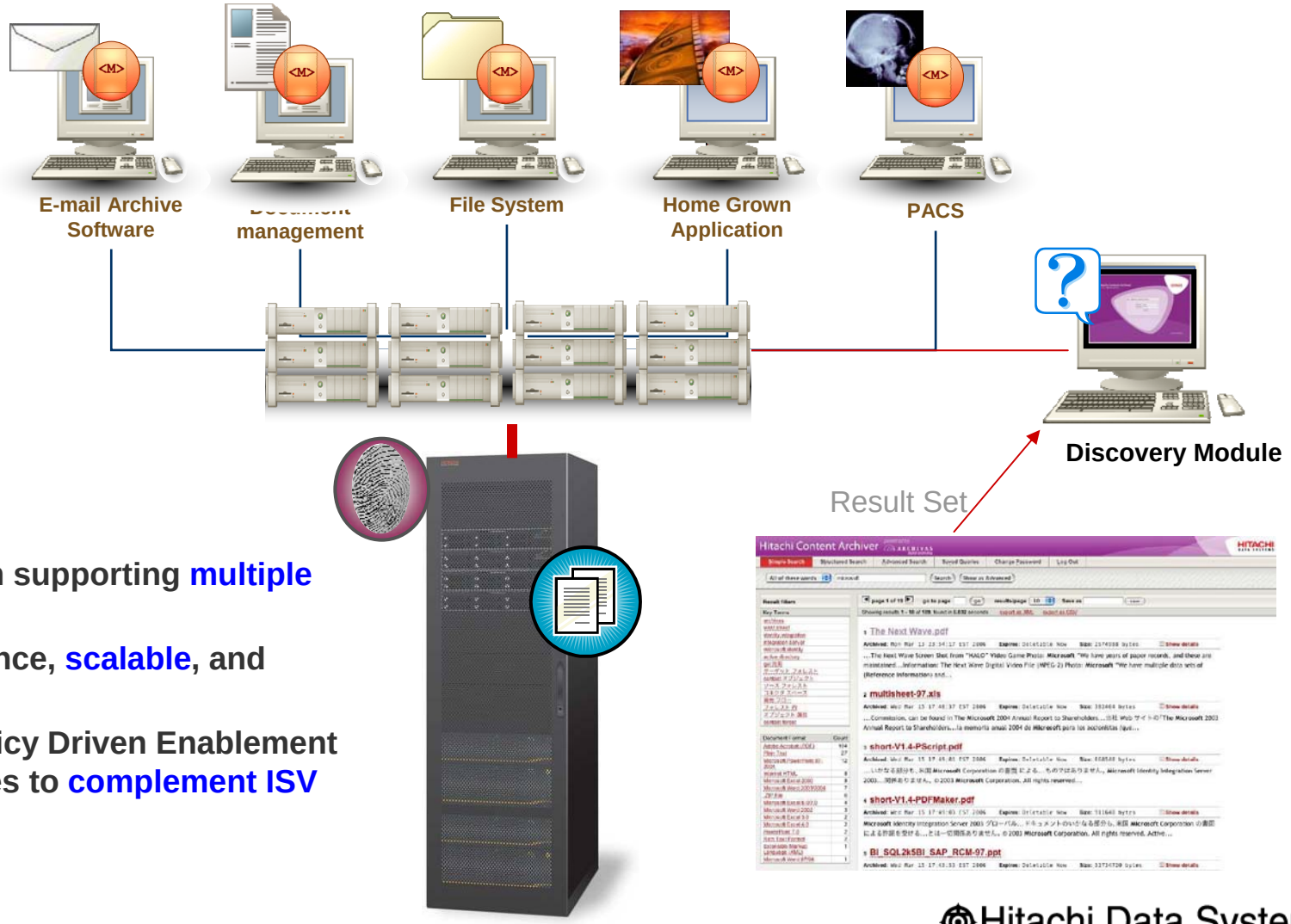


- Single platform supporting multiple applications
- High-performance, scalable, and secure storage
- Automatic, Policy Driven Enablement of Data Services to complement ISV Intelligence



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# Archive Objects – Content Aware Storage

- Data
  - File contents stored in original, unaltered format
  - Write once read many (WORM) storage
  - Global file system and standard namespace
- Metadata
  - Self-describing attributes
  - User extensible in the future
  - Database for scalability and extensibility

Policies

- Protection of data through mirroring across nodes
- Retention to ensure compliance
- Digital signature for authenticity
- Single Instancing for storage optimization
- Replication

# Customer/User View of the Archive

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## Open Interoperability

- Supports UNIX and Microsoft file systems, can store standard file formats such as XML and HTML, and can leverage other Hitachi SAN storage platforms

## WORM, Immutability and Retention

- Write once, read many file system where content is stored in an immutable format with the ability to set file-level retention

## Single Archive Name Space

- All objects are stored in a single, archive-wide global name space, a well understood paradigm
- Open and easy to navigate with standard tools and applications

## Simple Monitoring and Management

- Can be configured and monitored through a Web-based interface and through SNMP

## Search and Indexing

- Provide simple and rapid discovery of archive data (search of files and metadata and custom metadata)

## Scalability

- Provide scalability and upgrade paths to create a long term archive
  - Multi-platform migrations
  - Enterprise scalability



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# HCAP Partner Ecosystem:
## The World's Leading ISVs

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# Questions/Discussion

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# Awards and Prizes

*Neil Evans, RSD UK Indirect*

*Harvey Smith, RSD UK & IR Channels*

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Please remember to fill in your survey and hand it in at reception in order to receive your “moleskin” book!

Thank you for coming!

See you at the pub!