

HITACHI INFORMATION FORUM 2012

HITACHI UNIFIED STORAGE (HUS) OVERVIEW

UNIFIED REDEFINED

JOHN MANSFIELD

SENIOR VICE PRESIDENT
GLOBAL SOLUTIONS STRATEGY AND DEVELOPMENT

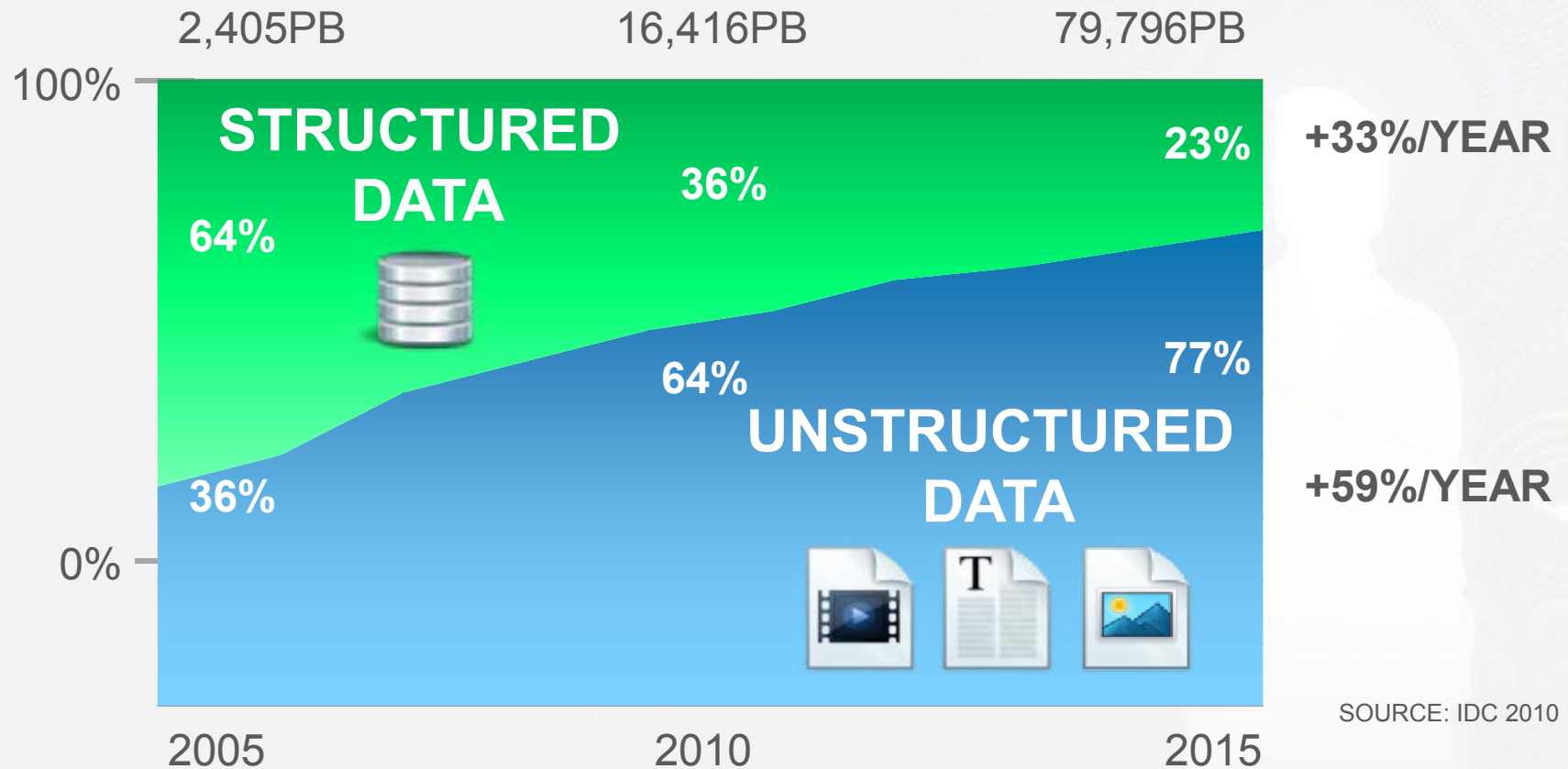
HITACHI DATA SYSTEMS

MAY 22ND, 2012

MARKET DIRECTION



MARKET SHIFT TO UNSTRUCTURED DATA



- **Cost savings** from consolidating separate block and file storage systems
 - **CAPEX** savings from consolidation
 - **OPEX** savings from environment, licensing and maintenance reductions
- **Flexibility**
- **Investment protection**



SIMPLIFIED MANAGEMENT

REGULATORY COMPLIANCE

BUSINESS PROTECTION

AUTOMATED DATA MANAGEMENT

CAPACITY ON DEMAND



UNIFIED REDEFINED: COMMON MANAGEMENT ACROSS THE STORAGE INFRASTRUCTURE

HITACHI
Inspire the Next

Cloud On Ramp



HDI SOFTWARE



HDI SINGLE



HDI DUAL

OBJECT & CONTENT PLATFORM



HCP 300



HCP 500

NAS PLATFORM



HNAS 3080



HNAS 3090



HNAS 3200

UNIFIED PLATFORM



HUS 110



HUS 130



HUS 150

BLOCK-ONLY PLATFORMS



HUS 110



HUS 130



HUS 150



VSP



COMMAND SUITE

TOP STORAGE CHALLENGES

The background is a dark, almost black, space filled with a complex network of thin, glowing lines in shades of purple, blue, and yellow. These lines form a web-like pattern that suggests a digital or data environment. On the right side, there is a large, white, stylized silhouette of a person standing. Behind the person's head are several concentric, glowing circles in purple and blue, creating a halo effect. A thin yellow line with small circular nodes at its ends extends from the person's head area towards the left, passing behind the text. In the lower right, there are faint, overlapping dollar signs (\$2 and \$2) and some small, illegible text, possibly representing financial data or a specific context related to storage challenges.



GROWTH MANAGEMENT



COST REDUCTION



COMPLEXITY MANAGEMENT



SERVICE LEVEL OBJECTIVES

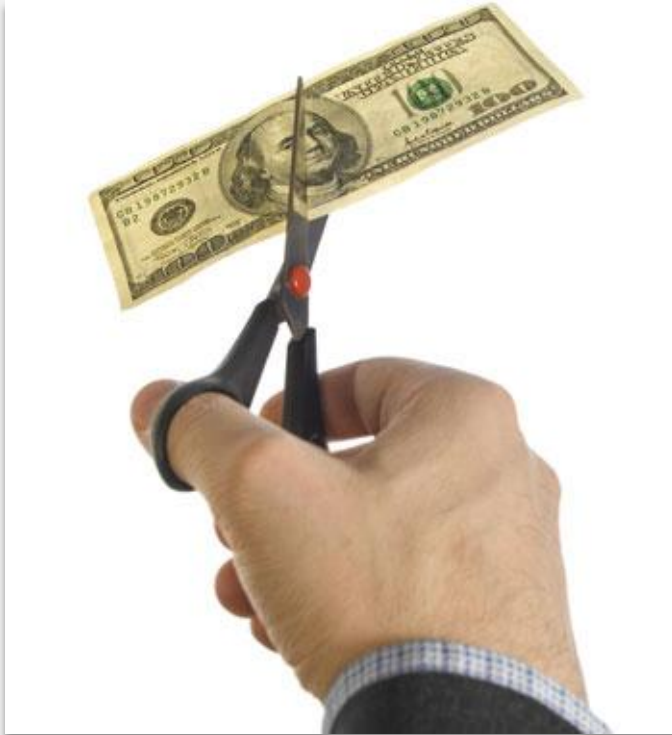


PROBLEM

Data capacity, applications and virtual servers are all growing at exponential rates

SOLUTIONS

- Grow block volumes and file systems dynamically and much larger than competitive midrange systems
- Simplify management of multiple nodes with single namespace
- Increase productivity with faster data access
- Scale single system capacity to 3PB
- Easily provision block and file capacity for VMs



PROBLEM

IT organizations must become more efficient as budgets remain flat or decline

SOLUTIONS

- Reduce CAPEX and OPEX costs by 50% or more through consolidation of multiple data types
- Extend storage investment further with balanced scalability
- Decrease primary backup data sets through automated archiving
- Improve capacity utilization across block, file and object
- Control on-going maintenance costs



PROBLEM

Housekeeping tasks take away from higher level activities

SOLUTIONS

- Automate failover and load balancing to maintain uptime and predictable performance
- Automate data tiering and migration for simplified data lifecycle management
- Deploy intuitive and easy to use software
- Intelligently manage multiple data types



PROBLEM

Failure to meet service level objectives can result in financial penalties or impact supported business units

SOLUTIONS

- Best combination of sequential and random performance
- Save costs and reduce risks with Hitachi reliability
- Provision data rapidly with 4 times the snapshots of the nearest competitor
- Application-aware data protection for server virtualization environments

PRODUCT DETAILS



MAJOR HUS ENHANCEMENTS OVER AMS 2000

**2X
CAPACITY**

**UNIFIED
STORAGE**

**3X SEQUENTIAL
PERFORMANCE**

**AUTO TIERING
AND
MIGRATION**

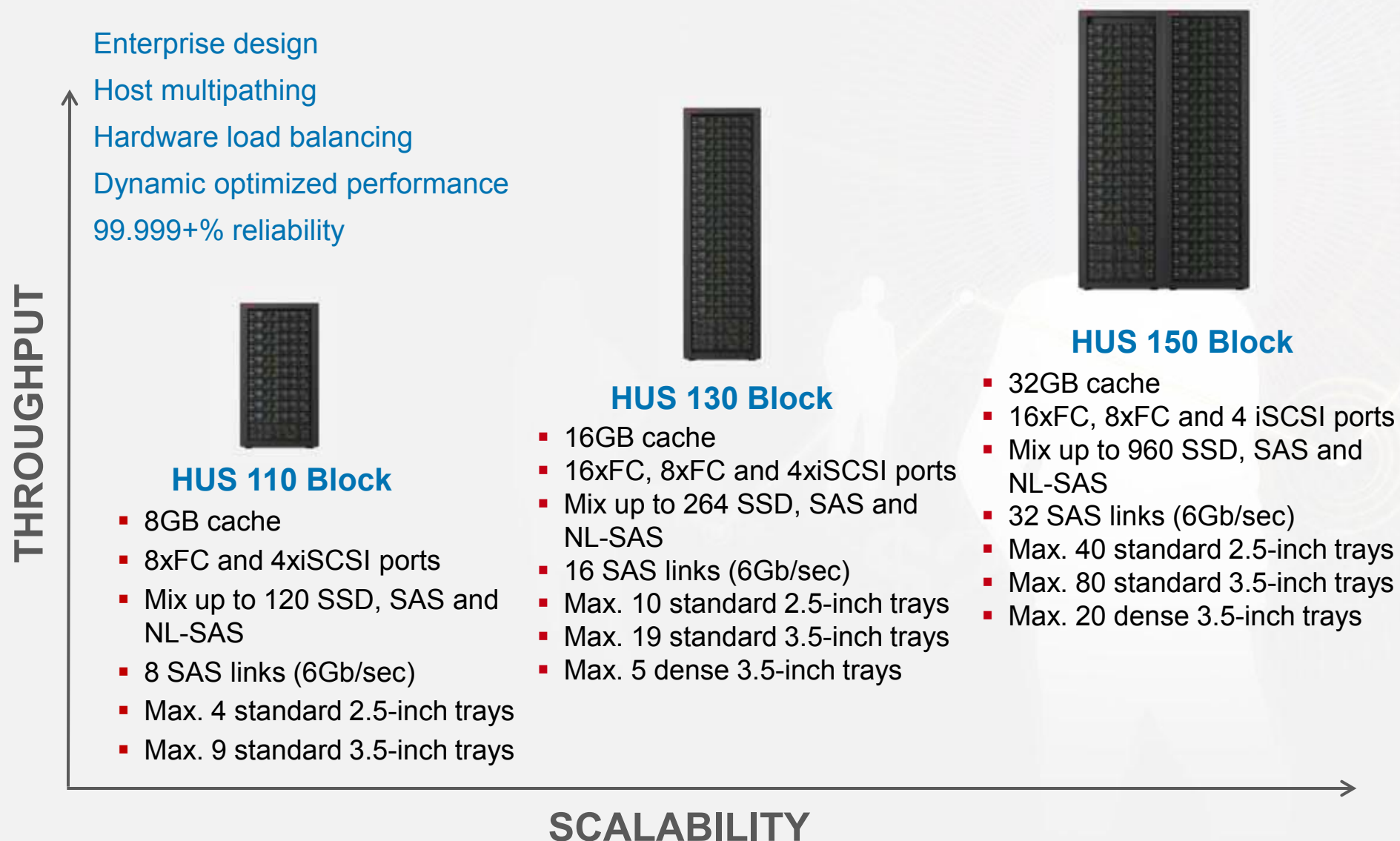
**EXPANDED
REPLICATION
SOLUTIONS**

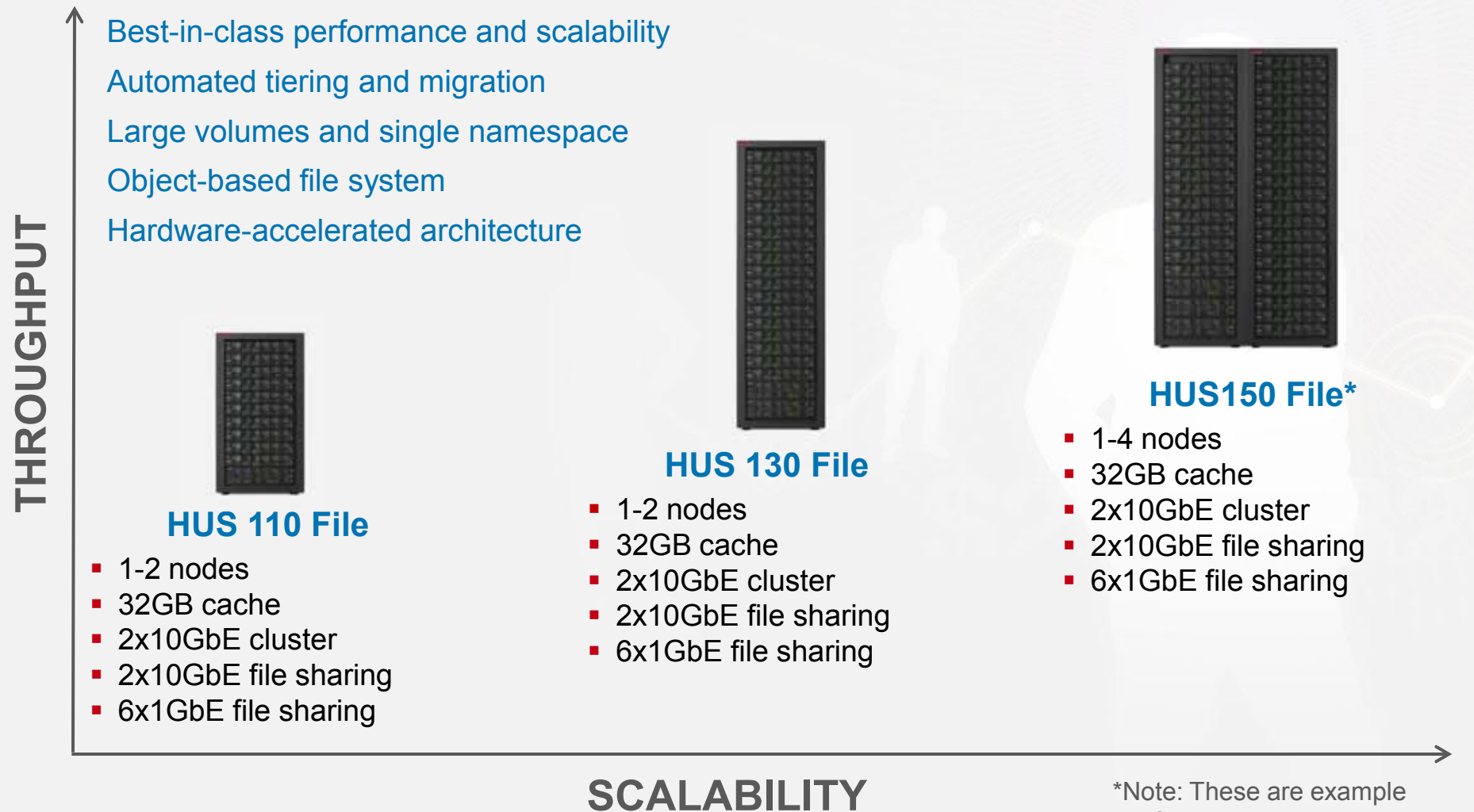
**BETTER
DENSITY**

**ENERGY
REDUCTION**

HUS BLOCK MODULE SPECIFICATIONS

HITACHI
Inspire the Next



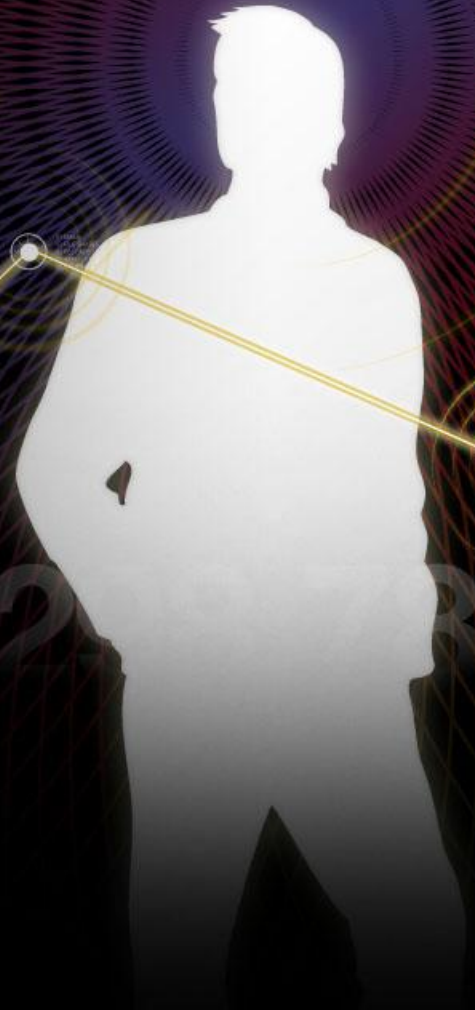
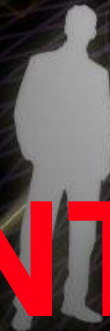


*Note: These are example configurations to show possible combinations of the file module.

HITACHI BASE OPERATING SYSTEM MODULAR (BOS M)	HITACHI BASE OPERATING SYSTEM FILE (BOS F)
DEVICE MANAGER	SYSTEM MANAGEMENT UNIT (SMU)
STORAGE NAVIGATOR MODULAR 2	FILE SYSTEM SNAPSHOT
LUN MANAGER	FILE SYSTEM ROLLBACK
PERFORMANCE MONITOR	STORAGE POOLS
SNMP AGENT SUPPORT FUNCTION	DYNAMIC PROVISIONING
CACHE RESIDENCY MANAGER	ENTERPRISE VIRTUAL SERVER (2X EVS)
CACHE PARTITION MANAGER	FILE SYSTEM PROTOCOLS (CIFS/NFS)
MODULAR VOLUME MIGRATION	NETWORK DATA MANAGEMENT PROTOCOL (NDMP)
DYNAMIC PROVISIONING	ANTIVIRUS SUPPORT
COPY-ON-WRITE SNAPSHOT	FILE SYSTEM AUDITING
SHADOWIMAGE® IN-SYSTEM REPLICATION	HIGH AVAILABILITY CLUSTER

HITACHI BASE OPERATING SYSTEM U

UNIFIED STORAGE MANAGEMENT



\$2

\$2

Hitachi Command Suite 7

File Actions Tools Help

Dashboard Resources Analytics Mobility Tasks & Alerts Administration

Resources

Storage Systems

Hosts

File Servers

▼ All File Servers

- D2JYSMK1@172.17.71.103
- DFLYSMK1@172.17.71.102
- DT139001182@172.17.46.201
- DT139001183@172.17.46.200
- scsil6970@192.1.2.70
- scsil6980@192.1.2.80**
- t2dstr-1@192.0.2.4
- t2dstr-2@192.0.2.3

Logical Groups

Tiers

All File Servers > scsil6980@192.1.2.80

Summary

File Server	scsil6980@192.1.2.80	Cluster		WWN
IP Address	192.1.2.80	Manager IP Address	172.17.69.80	Mode
Capacity	3.93 TB	Last Refreshed	2011-12-28 02:54:57	

System Drives Storage Pools File Systems Shares

Filter On Off Select All Column Settings Rows/page: 30

Volume	Port	Label	Storage Pool	ID	Capacity	Storage System	Host
00:02:01	CL1-F	ffs poolvol	Finance File Shares	-	-	USP_V@1...	scsil6980...
00:00:A5	CL1-B, CL2-F	ffs poolvol	Finance File Shares	29	400.00 GB	USP_V@1...	scsil6980...
00:02:9C	CL1-F	hrfs poolvol	HR File Shares	17	16.06 GB	USP_V@1...	scsil6980...
00:02:9D	CL1-F	hrfs poolvol	HR File Shares	18	16.06 GB	USP_V@1...	scsil6980...
00:00:F7	CL1-B	ffs poolvol	Finance File Shares	16	2.29 GB	USP_V@1...	scsil6980...
00:05:00	CL1-B, CL1...	ffs poolvol	Finance File Shares	47	200.00 GB	USP_V@1...	scsil6980...
00:05:01	CL1-B, CL1...	ffs poolvol	Finance File Shares	48	200.00 GB	USP_V@1...	scsil6980...

Allocate Volumes

To allocate volumes to a host, first select the host and specify the number of volumes, capacity between the host and storage system, edit the paths.

Host: scsil6970@192.1.2.70,scsil6980@192.1.2.80

No. of Volumes: 1

Volume Capacity: 4 TB

Required capacity: 4.00 TB

Storage system: HUS130@172.17.46.42

Volume type: Any

Volume location: Internal

[Advanced Options](#)

[Path Options](#)

No. of paths: 1

Host	Host Port	Storage Port	Controller	Storage Port Type	Storage System
scsil6970@192.1.2.70	60.03.01.70.00.01.84.81	CTL0-C	CTL0	FC	HUS130@172.17.46.42
scsil6980@192.1.2.80	60.03.01.70.00.01.83.01	CTL0-C	CTL0	FC	HUS130@172.17.46.42

Edit Paths

[Host Group and LUN Settings](#)

Show Plan Cancel Help

HCS can provision to block, file and object consumers, and helps to make possible one platform for all data

HITACHI COMMAND SUITE – UNIFIED CONFIGURATION

HITACHI
Inspire the Next

The screenshot shows the Hitachi Command Suite 7 web interface in a Windows Internet Explorer browser. The address bar shows the URL `http://10.210.36.74:8080/focus-srm-gui/`. The interface includes a top navigation bar with 'File', 'Actions', 'Tools', and 'Help' menus. A left sidebar contains a 'Resources' section with 'Storage S', 'Hosts', and 'File Serve' categories, and a 'General Tasks' section with 'Allocate Volumes' and 'Create Pool' options. The main content area displays the 'Hitachi High-performance NAS Platform™ powered by BlueArc®' login screen, which includes fields for 'User ID' and 'Password'. A 'Log Out' button is visible in the top right corner. A status bar at the bottom shows 'Selected: 1 of 7' and buttons for 'Allocate Volumes', 'Create File System', 'File Server Manager', 'Export to CSV', and 'More Actions'. A dropdown menu for 'More Actions' is open, showing 'Unallocate Volumes' and 'Migrate Data'. Four blue callout bubbles are overlaid on the interface: one pointing to the 'File Server Manager' button with the text 'Integrated file system management'; one pointing to the login fields with the text 'Must sign in 1st time only'; one pointing to the 'Create File System' button with the text 'Example of in-context launch'; and one pointing to the 'File Server Manager' button with the text 'Example of Link & Launch to HNAS SMU'.

Integrated file system management

Must sign in 1st time only

Example of in-context launch

Example of Link & Launch to HNAS SMU

HITACHI COMMAND SUITE – UNIFIED MANAGEMENT

HITACHI
Inspire the Next

The screenshot displays the Hitachi Command Suite 7 web interface. The left sidebar shows a tree view of logical groups under 'All Logical Groups', including 'London', 'NY', 'E-Banking', 'Hyper-V', 'IT Operations', 'Exchange', 'HCP', 'HUS-FM', 'VTL', 'SAP', 'VMware', 'Santa Clara', and 'Sydney'. The 'Hyper-V' group is highlighted with a red box. The 'HUS-FM' group is expanded, showing 'Finance File Shares' and 'HR File Shares', both of which are also highlighted with red boxes. The main panel shows a 'Summary' view for the selected logical group, displaying details like 'Name', 'No. of Hosts', and 'Total Capacity'. Below this is a 'Volumes' table with columns for Volume, Label, LUN, Model, and Host. The table lists 11 volumes, with the first 10 having a label of 'ffs fmvol' and the last two having a label of 'ffs fmvol'. A blue speech bubble with the text 'HCS logical groups support block, file and object-based consumers' points to the 'Hyper-V' group in the sidebar.

Hitachi Command Suite 7

File Actions Tools Help

Dashboard Resources Analytics Mobility Tasks & Alerts Administration

Resources

Storage Systems
Hosts
File Servers
Logical Groups

▼ All Logical Groups

- ▶ London
- ▼ NY
 - ▶ E-Banking
 - ▶ **Hyper-V**
 - ▼ IT Operations
 - ▶ Exchange
 - ▶ HCP
 - ▼ **HUS-FM**
 - ▶ Finance File Shares
 - ▶ HR File Shares
 - ▶ VTL
 - ▶ SAP
 - ▶ VMware
 - ▶ Santa Clara
 - ▶ Sydney

Summary

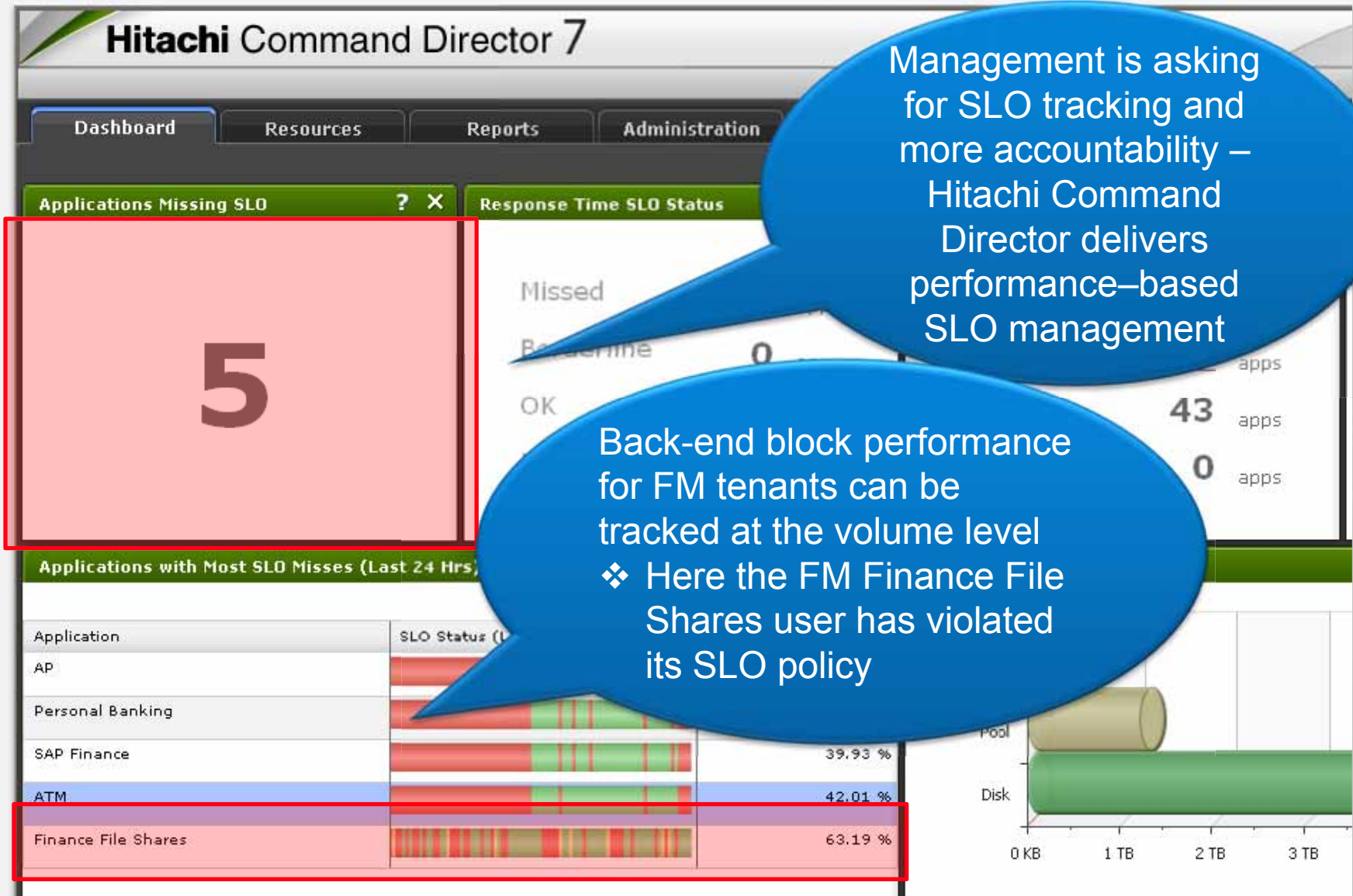
Name	East Coast File Shares
No. of Hosts	11
Total Capacity	2012-01-24 02:44:38

Volumes

Volume	Label	LUN	Model	Host
00	ffs fmvol	0000	HUS130	DT139001182@172.17....
01	ffs fmvol	0001	HUS130	DT139001182@172.17....
02	ffs fmvol	0002	HUS130	DT139001182@172.17....
04	ffs fmvol	0004	HUS130	DT139001182@172.17....
05	ffs fmvol	0005	HUS130	DT139001182@172.17....
06	ffs fmvol	0006	HUS130	DT139001182@172.17....
07	ffs fmvol	0007	HUS130	DT139001182@172.17....
08	ffs fmvol	0008	HUS130	DT139001182@172.17....
09	ffs fmvol	0009	HUS130	DT139001182@172.17....
112	ffs fmvol	0000	AMS2300	-
115	ffs fmvol	0002	AMS2300	-

Rows/page: 250 Page

HITACHI COMMAND SUITE AND COMMAND DIRECTOR – UNIFIED MANAGEMENT OF SLO



DATA PROTECTION SOLUTIONS



END-TO-END UNIFIED DATA- PROTECTION SOLUTION SET

FILE-BASED **REPLICATION**

CLONES AND **SNAPSHOTS**

SYNC AND ASYNC **REMOTE** REPLICATION

APPLICATION-AWARE SNAPSHOT
MANAGEMENT

REPLICATION **MANAGEMENT**

CONTINUOUS DATA PROTECTION

DISK-BASED **BACKUP** AND **RECOVERY**



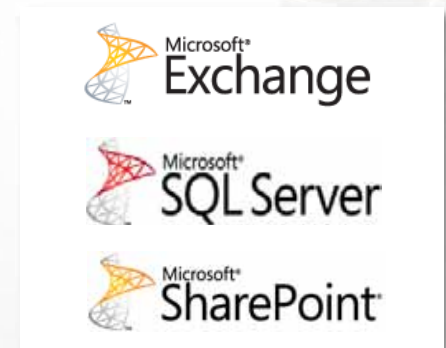
- Scalable solutions
- Nondisruptive
- Simple, easy to use
- Application consistent

WHAT IS APPLICATION PROTECTOR?

- Easy-to-use application consistent snapshot software for backup, recovery and protection of critical application environments

WHY APPLICATION PROTECTOR?

- Simplifies application administrator protection procedures
- Protects data using interfaces already known
- Doesn't depend on storage or backup admins
- Offers block and file application snapshot protection
- Protects a full range of major applications

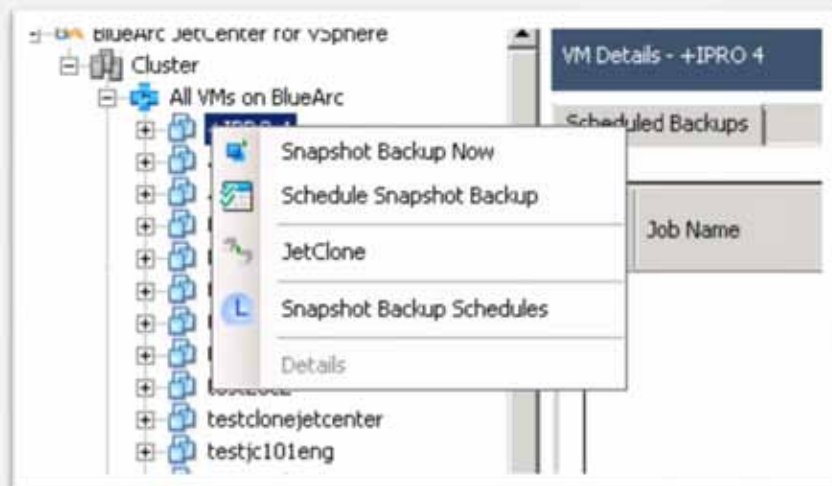


REDUCE RTO AND RPO WITH APPLICATION-CONSISTENT DATA PROTECTION

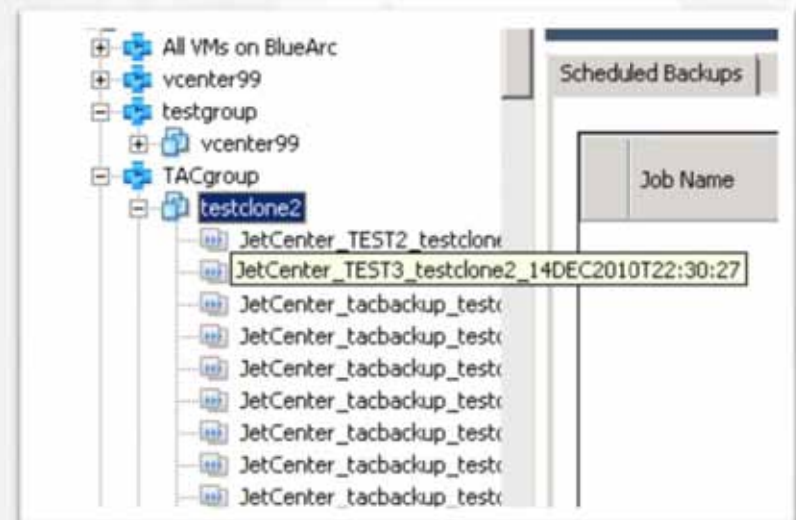
INTUITIVE DASHBOARD



RIGHT-CLICK SHORTCUTS



EASY SNAPSHOT BROWSING

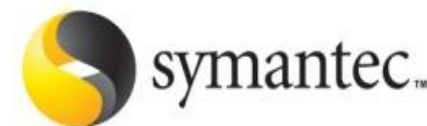


APPLICATION AND BUSINESS SOLUTIONS



SOLUTIONS TO HELP APPLICATIONS RUN AT THEIR BEST

HITACHI
Inspire the Next



SUMMARY



- **Next-generation** architecture for modular storage
- Powerful **enterprise-class** features in a midrange package
- Ideal platform for **multiple data types** and applications
- The most **scalable unified storage** available in the market

THANK YOU

