Preserving Rich media: practical experiences

Digital Library Reduce Risk & Optimize Cost
**Hi-Stor**

Digital libraries challenges in Rich Media preservation
StorSentry: A proactive approach for a better preservation
Proven success at large customers
Conclusion – Q&A
Hi-Stor

• Founded in 1997 – 10Y+ success in Storage Management

• High Innovation Solutions and expert teams
  – Tape storage Technologies, Storage systems and architecture,…
  – 1st Optical servo for DLT, 1st MXF NAS Tape solutions for Media Industry,…
  – European technology development: Prestospace / LINDO

• Solutions for Large Data Centers Management
  – StorSentry™: Tape Data Protection & Storage Optimization
  – StorBee™: Storage Optimization through Active Archiving
  – Hi-Stor & Partners Services: Consulting, Installation, Training & Ongoing Support

• Key Industry Partners:

• Proven success at large customers in Europe and in the USA

• Offices in France and USA - Represented in UK, Italy and Germany
• Member of SNIA and key awards at NAB & IBC events

✓ Delivering more added value to our customers
✓ Delivering innovation for business breakthrough
✓ Delivering continuity and long term solutions to our customers
Hi-Stor’s Expertise

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Digital libraries storage challenges

- Identify the right formats
- Select contents to preserve
- Migration plans
- Access and security
- Generate business

Huge amount of Storage  !!!!!

Better Managing Risks while Optimizing Operations Cost
Disk/Tape Storage Cost Comparison

SATA Disk
$1500/TB/yr

- Media Cost: 35%
- Other capital: 16%
- Maintenance & License: 15%
- Facilities (power, space): 11%
- Labor: 23%

Tape
$500/TB/yr

- Media Cost: 20%
- Other capital: 33%
- Maintenance & License: 20%
- Facilities (power, space): 5%
- Labor: 22%

Tape is there for long years: COST

Source: SDSC study
What about performances?

Tape is there for long years: GREEN - PERF
Tape life depends on USAGE

Non magnetic under layer: \( TiO_2 \) type particles

Magnetic layer: nano metal particles

Back coat layer: carbon like

Base film: PET-PEN

6 to 10 µm thickness

Tape coating lifetime is sensitive to:
- Environmental conditions: T / H (friction, shrinkage)
- USAGE: Drives quality, data flows, transportation, ... !!!
Video tape / Digital tape
Defect Management

Bad tape (video tape)

`FORWARD`

Bad tape (Digital tape)

`LOST`
Tape Storage Management issues

- When to replace a tape?

- When to retire or make revised a drive that might compromise critical data?

- How to discriminate errors due to drive failures from errors coming from cartridges?

- Is my tape library used at its best level of performances?

- ...
Hi-Stor
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**Tape system Users control directly performance & quality in real time**

**StorSentry™** runs in parallel to the archive application to collect quality / performance related data during production:

- **in band monitoring**
Hi-Stor Technologies
High Impact Storage Management Solutions

StorSentry Key Functions

1. Discriminate Drive/Media failures
2. Performances
3. Audit
4. Drive/Media

Thinking Beyond Storage
Discriminate Drive/Media failures

➢ The right decision at the right time with the right information

• Last night’s archive reports indicated there was a problem writing to tape .........
  • Was there a problem with one of the tapes
  • Or was it the drive?
  • Or was it something else?

StorSentry Solution: A true independent diagnosis
Discriminate Drive/Media failures

- Efficient use of IT staff + Reduced TCO

Through statistical analysis

StorSentry in “General” tab allows to determine in real time the origin of errors and alerts

2 drives are to be monitored

Indicated cartridge is bad

Tape is error primary cause
Hi-Stop
High Impact Storage Management Solutions

StorSentry
Key Functions

- Discriminate Drive/Media failures
- Customisable Proactive Degradation Monitoring

3

4
Proactive Monitoring of Tape degradation

- Saving $$$ on tape media
- Minimizing Risk of Data loss

Cost/Risk optimization

Nominal level

StorSentry™ critical threshold

Manufacturer spec threshold

Alarm

Risk

Cost

Time

Resources quality

Data recovery

Data loss
Hi-Gh Impact Storage Management Solutions

StorSentry Key Functions

- Discriminate Drive/Media failures
- Customizable Proactive Degradation Monitoring
- Easy IT Operations control
- 4
IT Operations easy control

From analysis nightmare to easy readable alarms

➢ Save Time for IT Operations Staff

Hi-Stor Storage Management Solutions

Feb 28 00:26:47 networker-hme0 root: [ID 702911 daemon.notice] NetWorker media: (critical) waiting for sdlt tape SD1341 on networker-hme0

Feb 28 00:37:30 networker-hme0 root: [ID 702911 daemon.notice] NetWorker media: (notice) sdlt tape SR1221 on rd=networker3-ge0:/dev/rmt/9cbn is

File 6 record 4714

Save Time for IT Operations Staff

Alarm 32 details

- Primary resource: XB18H0390
- Mount: 40
- Date: 2004-03-01 17:42
- Secondary resource: SR1226
- Occurrences: 2
- Previous date: 2004-02-25 15:07

Message

Interface. The tape drive has a problem with the host interface: check the cables and cable connections.
StorSentry Key Functions

- Discriminate Drive/Media failures
- Customizable Proactive Degradation Monitoring
- Easy IT Operations control
- Audit and Optimisation
Hi-Stor Technologies

High Impact Storage Management Solutions

Keep Control on your Tape Storage Infrastructure Performance

Drive quality performance comparison within a system or library

Alarm occurrence history over a period of time
Non intrusive, independent from applications
No impact on performances
<table>
<thead>
<tr>
<th>Operating systems</th>
<th>Drive technology</th>
<th>Library vendor *</th>
<th>Software applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Windows NT, 2K, XP, 2003</td>
<td>▪ DLT (4k, 7k, 8k)</td>
<td>▪ SUN</td>
<td>▪ Symantec NetBackup</td>
</tr>
<tr>
<td>▪ Linux</td>
<td>▪ SDLT 220, 320 &amp; 600</td>
<td>▪ Overland</td>
<td>▪ Tivoli Storage Manager</td>
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<tr>
<td>▪ SUN Solaris</td>
<td>▪ Ultrium LTO Gen1 to 4</td>
<td>▪ Quantum ATL</td>
<td>▪ Legato Networker</td>
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<tr>
<td>▪ AIX</td>
<td>▪ SUN 9x40</td>
<td>▪ Tandberg</td>
<td>▪ Bakbone Netvault</td>
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<td>▪ HP-UX</td>
<td>▪ T10K</td>
<td>▪ Exabyte</td>
<td>▪ Atempo Time Navigator</td>
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<tr>
<td>▪ IBM OS390</td>
<td>▪ IBM 3490, 3590, 3592</td>
<td>▪ IBM</td>
<td>▪ DiskXtender</td>
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<td>▪ IBM z0S</td>
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<td>▪ ADIC</td>
<td>▪ SamFS</td>
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<td>▪ Bull GCOS</td>
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<td>▪ HP/COMPAQ</td>
<td>▪ CommVault Galaxy</td>
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<td>▪ Spectralogic</td>
<td>▪ CA BrightStor ArcServe</td>
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<td>▪ EMC AvalonNidm</td>
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<td>▪ FPDI DivArchive</td>
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<td>▪ HPSS...</td>
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</table>
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**StorSentry : A proactive approach for a better preservation**

*Proven success at large customers*

**Conclusion – Q&A**
A Broadcast Archive Service provider

StorSentry®

BBC Broadcast

ADIC 10K + i2000
FPDI
LTO
• How does StorSentry fill Broadcast Service provider needs:
  
  – Red Bee Media specialises in the broadcast of digital media.

Based in West London, Red Bee Media provides digital archive services, media distribution and promotion services.

Red Bee Media is currently responsible for handling thousands of tapes for multiple clients such as the BBC, so it is mandatory that their digital content is fully monitored, preserved and stored efficiently.
Customer questions …

- *Know when to replace a cartridge that might have a problem when restore?*
- *Know when changing a drive that might compromise further data writing or reading?*
- *Have a global overview of media quality?*
- *Know if drives are used uniformly?*
- *Be alerted when a cartridge has not be seen by the system since a given time?*
- *Be alerted when a drive cleaning must be done?*
- *Be alerted when a cleaning cartridge has expired?*
How to know when to replace a cartridge that might have a problem during restore?
How to know when to change a drive that might compromise further data writing or reading?
How to have a global overview of media quality?

“General media status” tab allows to have a global overview of media quality.

List of available media for each category.
• Tony West, head of IT at Red Bee Media:

"The installation has proved a great success. The **software identifies potential problems before they occur** giving us time to fix them, so we don't have to worry about whether our magnetic tapes are wearing out. **We are now absolutely confident that our clients' data is safe because errors are flagged to us earlier.**
A Broadcast End User case

ATLANTA AND UK SITES

AVALON EMC

Multiple SUN SL 8500

LTO / 9940 / T10K
StorSentry at Turner

- Installed in 2006 to protect content that Turner owns
- First in Atlanta then UK site: 60 drives and 10,000 tapes
- Monthly reports to monitor quality per site
- Supports archive manager changes planned 2009
A Digital Archive End User case

BnF

ARCHIVE SYSTEM

SAM-FS

SUN SL 8500

SUN T10K / 9840C
StorSentry at BNF

- Installed in 2007, to protect French National digital archive
- Monitor: 20 drives and 10,000 tapes
- API interface with integration into the BNF SPAR application
  - All monitoring info in a central supervision SPAR framework
  - Possibility to generate automatic tape migrations based on diagnostics
Hi-Stor Technologies - High Impact Storage Management Solutions

Proven Results in the Rich media

Discriminate Drive/Media... Failure
Efficient use of IT staff
Reduce TCO

Greater visibility
Ease management of IT operations
Save Time
Maximize usage of existing resources

Risk Reduction
Audit and Optimize your infrastructure
Increase SLAs
Capacity planning

Prevent Degradation
Increase speed & success of Archives, Restores
Reduce downtime

Reduce TCO
Greater visibility
Risk Reduction
Proven Results in the Rich media
Hi-Stor Technologies
High Impact Storage Management Solutions

Thank you for your attention!

Questions & Answers

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