

Blending of Disk and tape in a Removable Environment

Nicholas D Harper

Spectra Logic Corporation

1700 North 55th St, Boulder CO 80301-2702

Phone:+1-303-449-6400 FAX: +1-303-939-8849

E-mail: nickh@spectralogic.com

Presented at the THIC Meeting at the National Center for Atmospheric Research, 1850 Table Mesa Drive, Boulder CO 80305-5602

June 29-30, 2004

THIC Inc.

The Premier Advanced Recording Technology Forum

Premises:

- Big swath of customers prefer disk to tape
 - NBT
 - Familiarity
 - Perceived Reliability
 - Perceived Cost
 - Don't need any software
- So what's stopping them?
 - Disk isn't removable
 - Disk isn't cheap
 - Tape costs when you buy
 - Disk is the cost that goes on giving
 - There's no software

So What's it Going to Take to
Put you in This Car?

Removability

What Do you Want?

- DISK
- Raid
- Removable

Introducing RXT Removable Disk Media

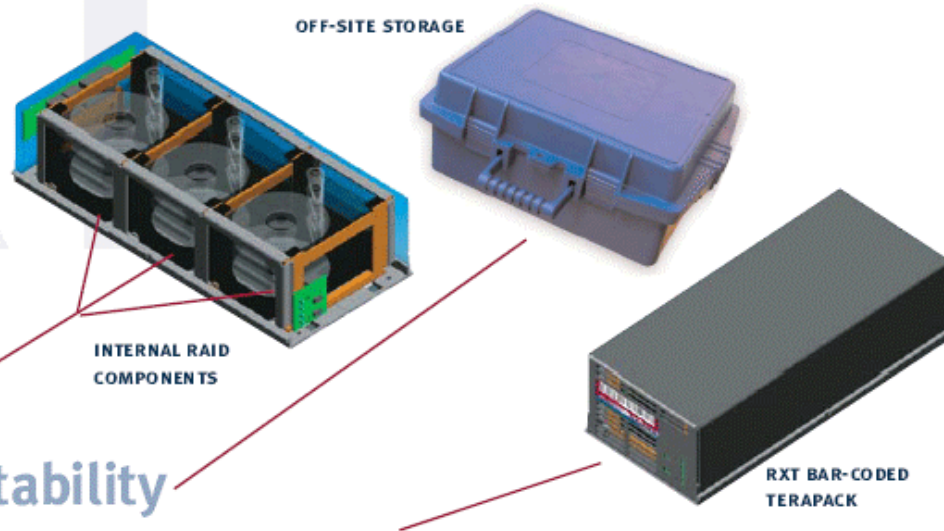


TeraPack Portable RAID Automated in a T950 Library

The First Automated Portable RAID

RXT Three Key Features

RXT



RAID: reliability

e**X**changeable: portability

TeraPack™: rugged, sealed enclosure, sized for both capacity and ease of handling, bar coded to simplify data and media tracking

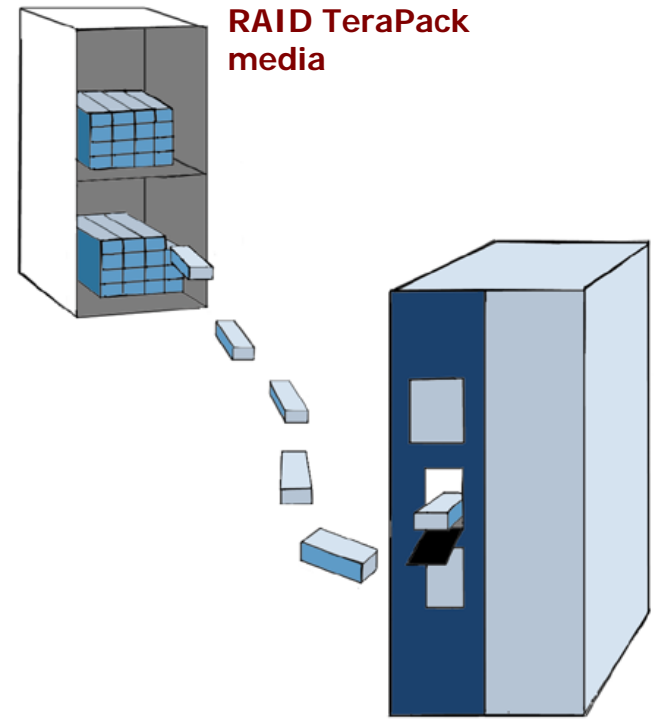
What has Changed to Make Automated, Removable Disk Feasible?

- **Availability of Highly Reliable Mobile SATA Drives**
 - 900G Shock Protection (non-operating)
 - 1,000K Hour MTBF
 - 80GB per Spindle and moving to 100+ GB soon
 - 80MB/sec Data Transfer Rate

- **Tape Library Design that Accommodates Media TeraPack Magazines**
 - Robotic Transporter for Media (TeraPack) Handling
 - Media Storage Chambers for TeraPacks
 - Import/Export Ports for Off-site Storage & Retrieval

RXT Components

- RXT Media - RAID TeraPack® (SATA disk spindles) in rugged, sealed enclosure
- RXT Drive — drive with an embedded RAID controller, Power, Pkg. and Ultra320 I/F



RXT Desk-top Drive



RXT media for stand-alone and T950



Data Protection/Backup Scenario

Current Environment

- Conventional Removable tape
- Conventional Fixed disk (Performance)
- Separate Disk and Tape Sub-Systems

New Environment/Options

- Removable RAID media with Tape
 - Combines disk's performance, reliability tape's portability
 - More than just performance enhancement and tape emulation
- True Integration within Automation (T950)
- Stand-Alone Removable RAID
 - Desk-Top, Server-ready, Rack-mount



RXT Disk in Any Storage Environment

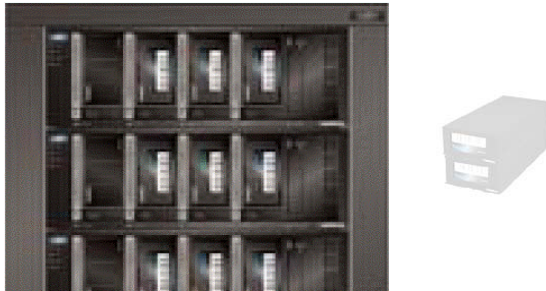
RXT Desk-Top



RXT Server-ready



RXT Rack-mount



RXT leverages existing storage applications and preserves investments in backup technology

T950 Library with RXT



T950 with RXT – Best in Class Automation

TeraPack Media Chambers

E/E Port

RXT TeraPack

Tape TeraPack

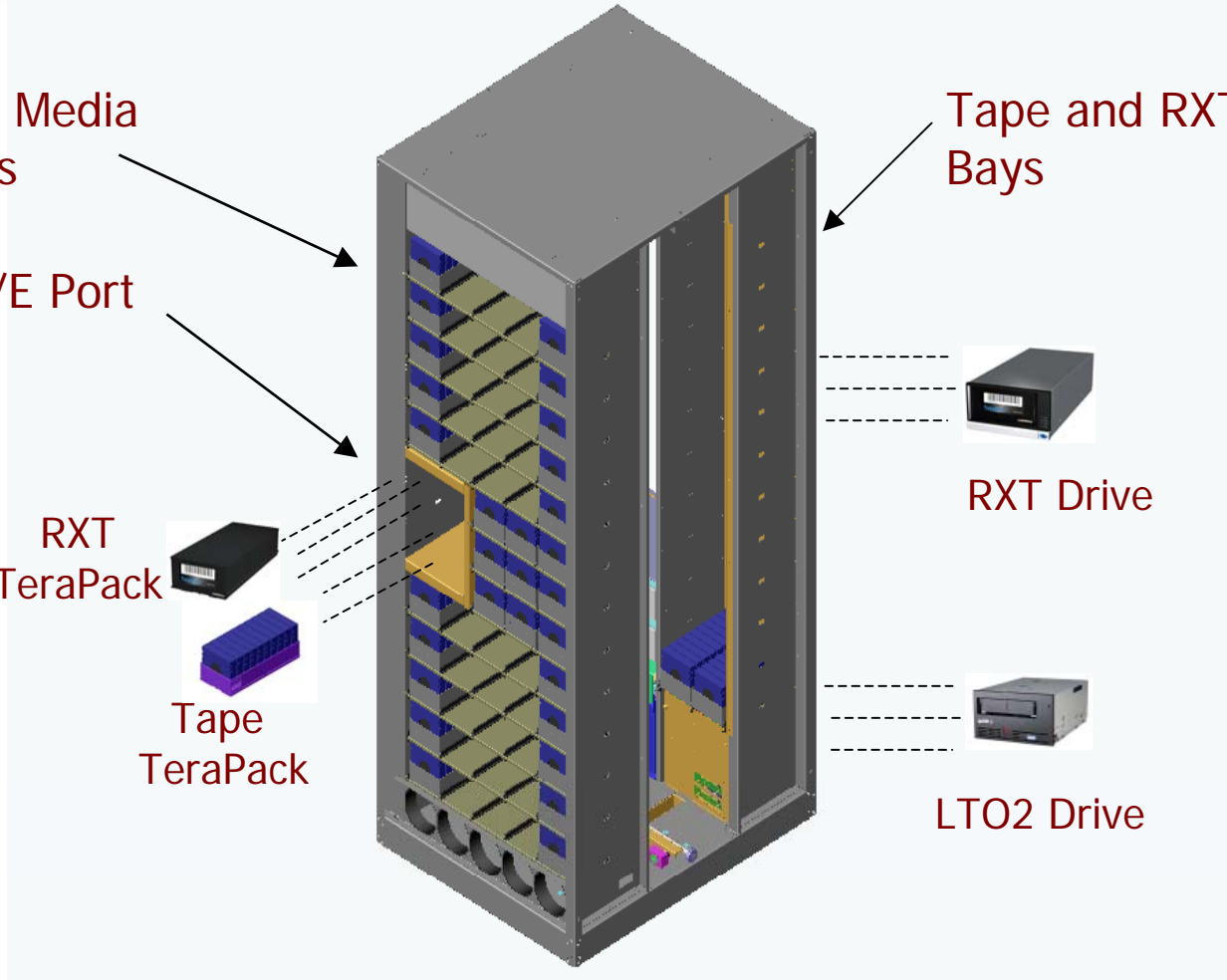
Tape and RXT Drive Bays



RXT Drive



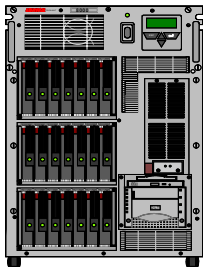
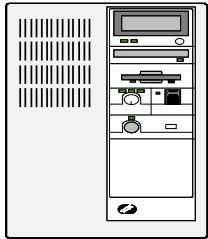
LTO2 Drive



Preserving the Backup Investment

T950 With RXT and Tape

Servers



Backup
To Disk
(Virtual Tape)



Once The Backup Is complete:

1. Leave Data On RXT For Fast Retrieval

OR

2. Export RXT For Off-site Storage

OR

3. Copy RXT To Tape (Vaulting)

RXT – A Solution Apart

Portability

- True removable RAID media
- Interchangeable with tape
- Spectra partnership with Iron Mountain

Flexibility

- Transparent to host applications
- Scale to wide range of capacities and performance
 - More than just disk caching with add-on boxes

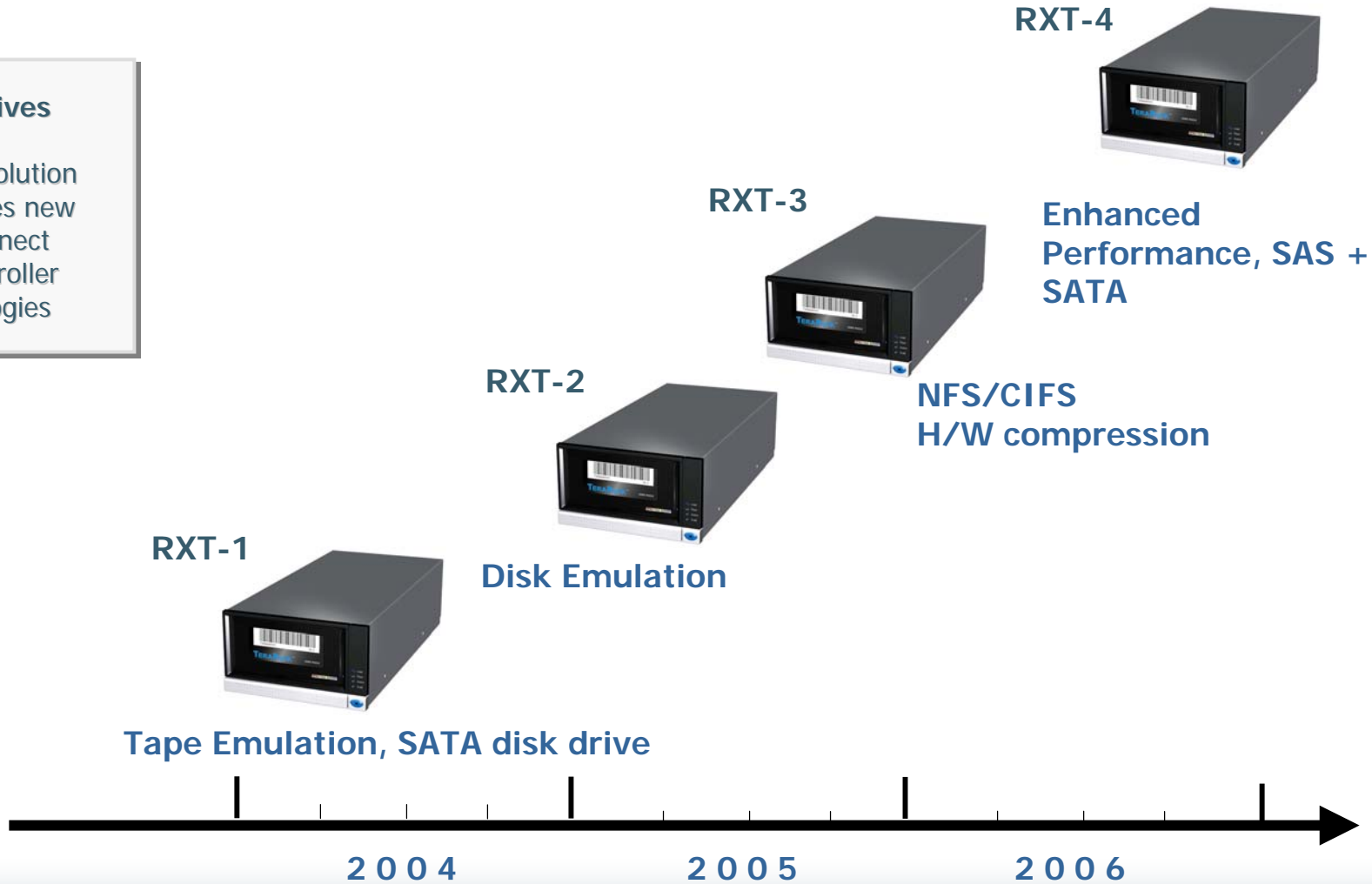
Range of Storage Application Environments

- True integration through the T950 for Data Protection
- Desk-top, Server-ready, and Rack-mount RXT Removable Disk Storage



RXT Drive Roadmap — A Step Ahead

RXT Drives
Product evolution incorporates new interconnect and controller technologies

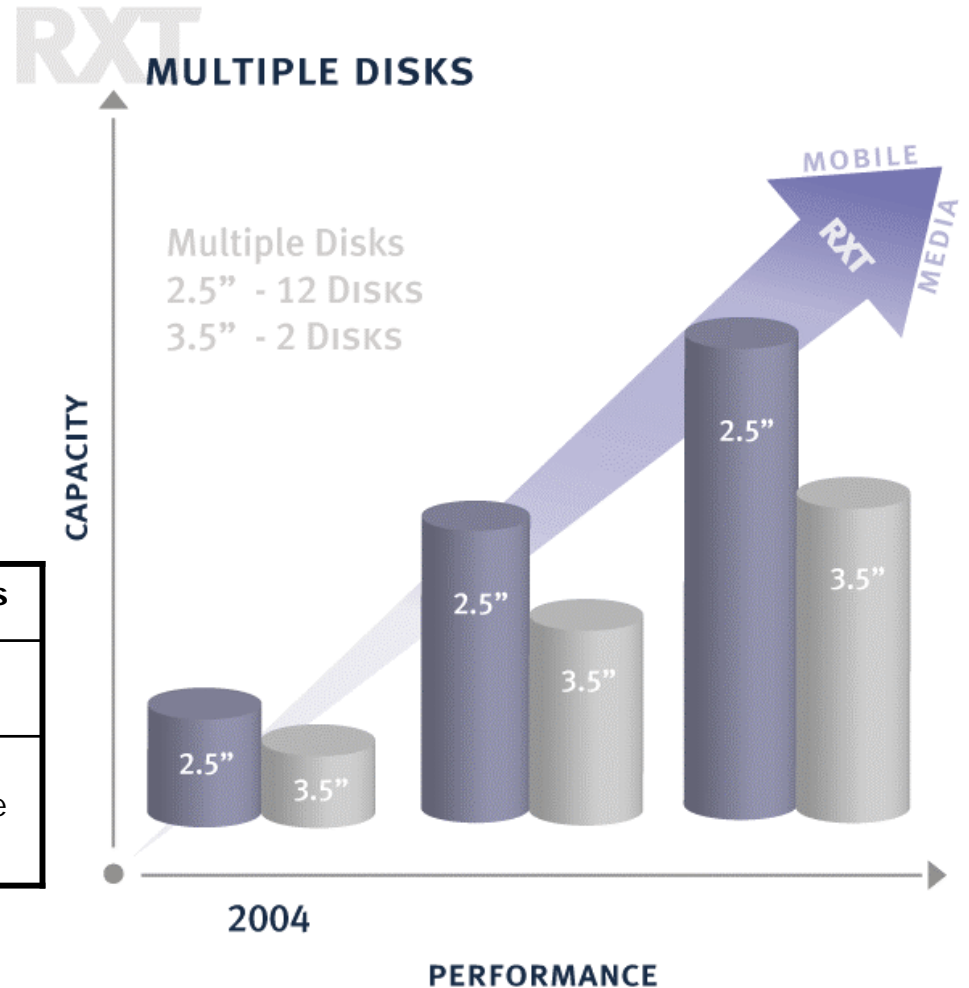


RXT Media Evolution

RXT media uses SATA drives; as SATA drives grow in capacity, cost effectiveness and performance, so will RXT media.

- 3 ½" media — greatest Terabyte/\$ value in RAID 0, 1. ~\$2,000 for 800GB
- 2 ½" media — highest throughput, transportability in RAID 0, 1, 5. ~\$6,000 for 960GB

	Current RXT Media options	
Configuration	(2) 3 ½" SATA drives	(12) 2 ½" SATA drives
Capacity	800 GB per TeraPack case	960 GB per TeraPack case
RAID Level	0, 1	0, 1, 5



RXT- You Asked For it

- First portable RAID media
- Combines the best features of RAID disk and tape technologies
- Provides high performance, capacity, reliability
- Supported by automation through T950 library
- Software support via tape backup applications
- Provides lowest cost of ownership



Cash or Charge?