

Betting your business on a tape format?

Things to consider

IDC Storage Conference
May 2003



Our Time Together

- Business pressures
- Why use tape?
- What is the true measure of tape?

Things to Consider

- Q & A



Business Pressures

Data Explosion

Disaster Tolerance

SEC Compliance
Standards

Customer Service

Competition

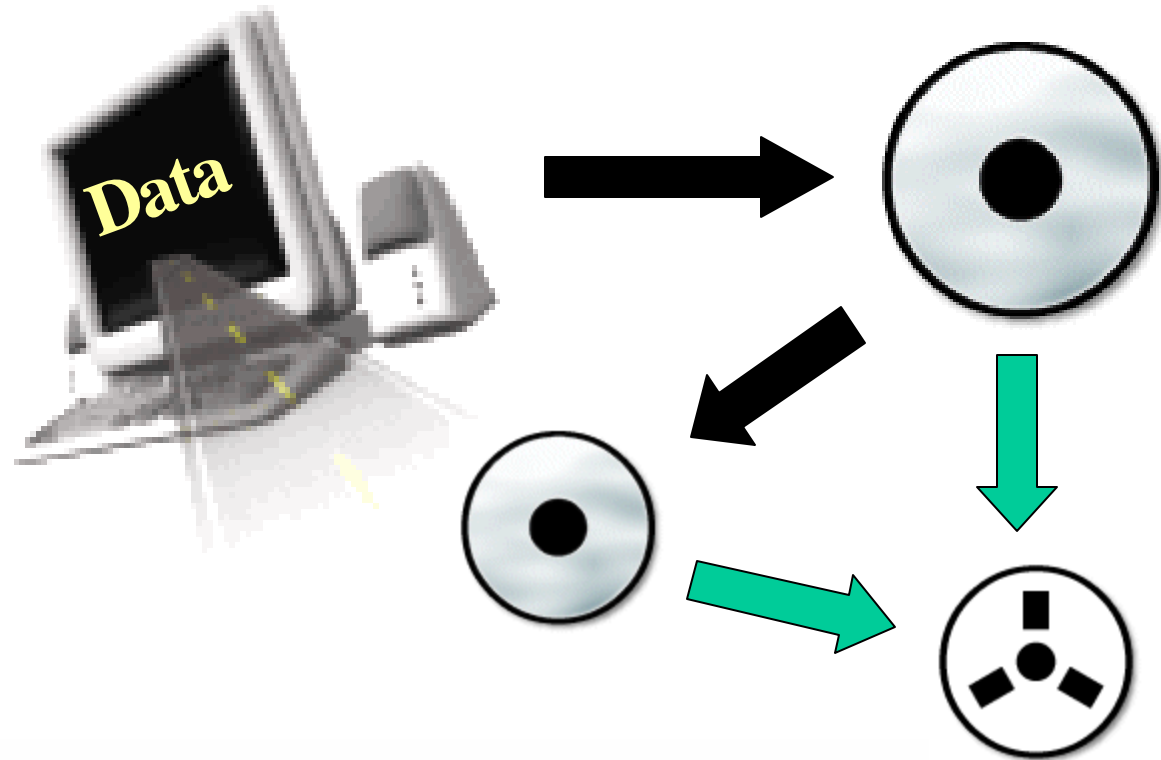
Cost Control

eBusiness 24x365

Data Security



What is needed?



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LTO

Top 10 Reasons to Use Tape

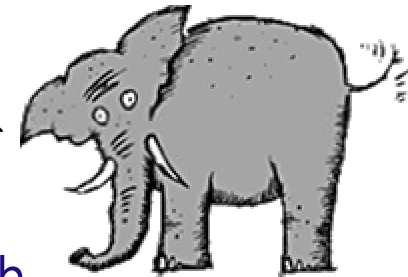
- 10 Comes in many shapes and sizes...round, square, rectangle, long, short, tall and fuzzy
- 9 Keeps all of us in business (kids need to go to college)
- 8 A socially acceptable four-letter word
- 7 Fascinating to watch the robots
- 6 You can touch it, carry it....it's tangible....fun to play with
- 5 Infinite capacity**
- 4 Fast**
- 3 Removable**
- 2 Transportable**
- 1 Cost effective**



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What is 400GB of LTO Cartridge Capacity?

Huge!



- Storage for 50,000 MP3 songs or 600 CDs
- Equal to a stack of 1.44MB floppies half a mile high
- 1 week of continuous DVD movies
- If 1 byte represented 1 sheet of paper, it's a stack of paper 26,400 miles high
- If 1 byte represented 1 heartbeat, it's 1 minute's worth of all the human heartbeats on earth
- 3000 times more data than a human brain retains in a lifetime
- If 1 byte represented 1 grain of sand, it's enough sand to fill a 96-ton mining truck



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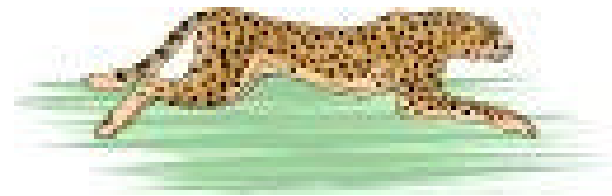
Is Tape Fast?

“Another factor in the mix is the growing speed of tapes...Now it has changed to: Can your disk keep up with your tapes?”

Technical Support, Dec. 2002, Perspectives in Storage, by Ira Goodman

How Fast Is LTO Technology Based Tape?

- ✍ Ultrium 2 format tape can deliver over 200GB per hour per drive
- ✍ An LTO tape library with five LTO Ultrium 2 tape drives can deliver over 1TB per hour



Data rates assume 2:1 data compression. User results may vary.



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Causes of Data Loss



Planned Outages

- ✍ Software updates
- ✍ Hardware upgrades
- ✍ Maintenance
- ✍ Moves
- ✍ Expansions



Unplanned Outages

- ✍ Natural Disasters
- ✍ Theft, Sabotage
- ✍ Virus, Bugs
- ✍ Human Errors
- ✍ HW-SW Failures



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Financial Impact of Disasters

<i>Type of Business</i>	<i>Average Hourly Impact</i>
Retail Brokerage	\$6,450,000
Credit Card Sales Authorization	\$2,600,000
Home Shopping Channel	\$113,750
Catalog Sales Centers	\$90,000
Airline Reservations Centers	\$89,500
Cellular Service Activation	\$41,000
Package Shipping Service	\$28,250
On-line Network Connect Fees	\$25,250
ATM Service Fees	\$14,500

Source: Contingency Planning Research (12/95)



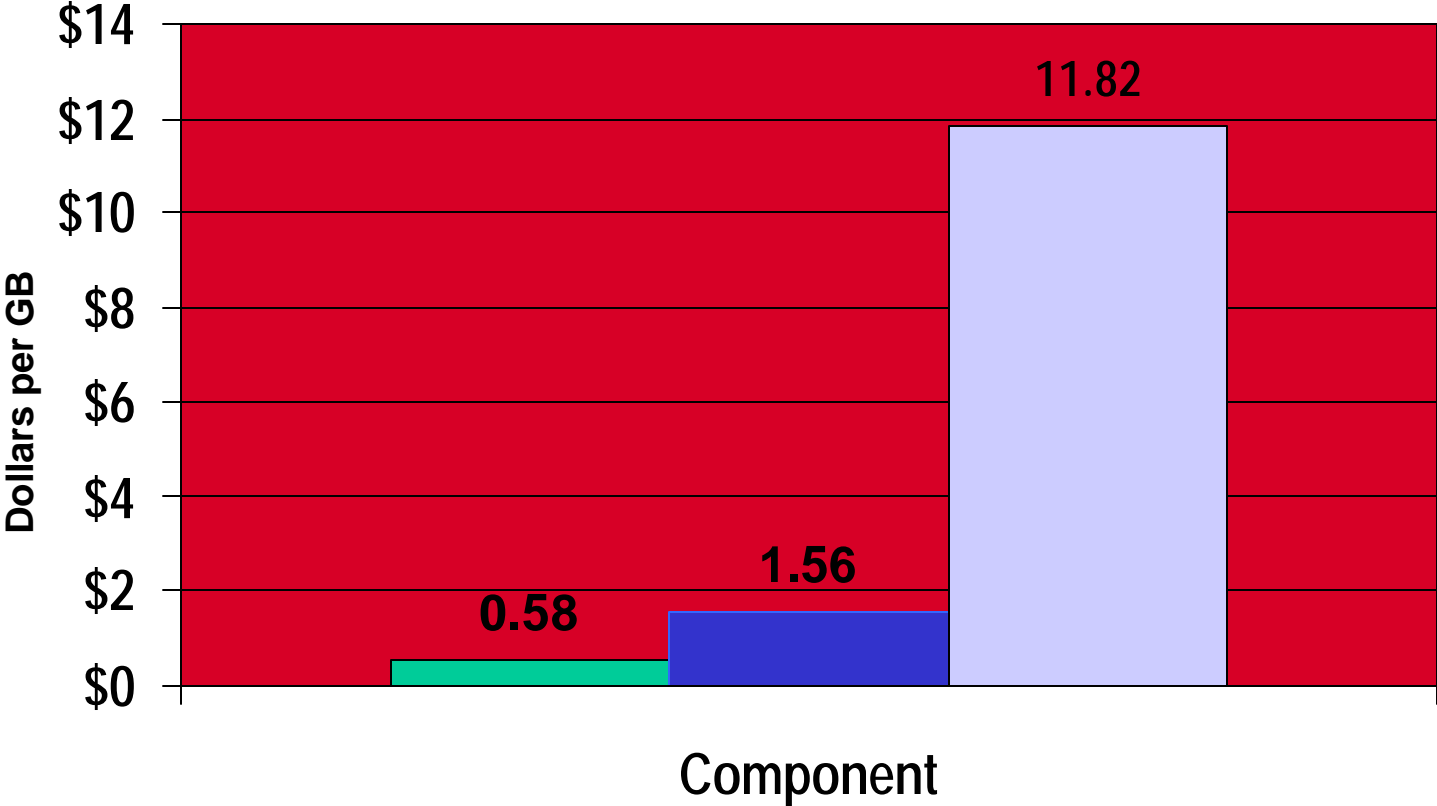
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Storage *Media* Retail Cost Estimates

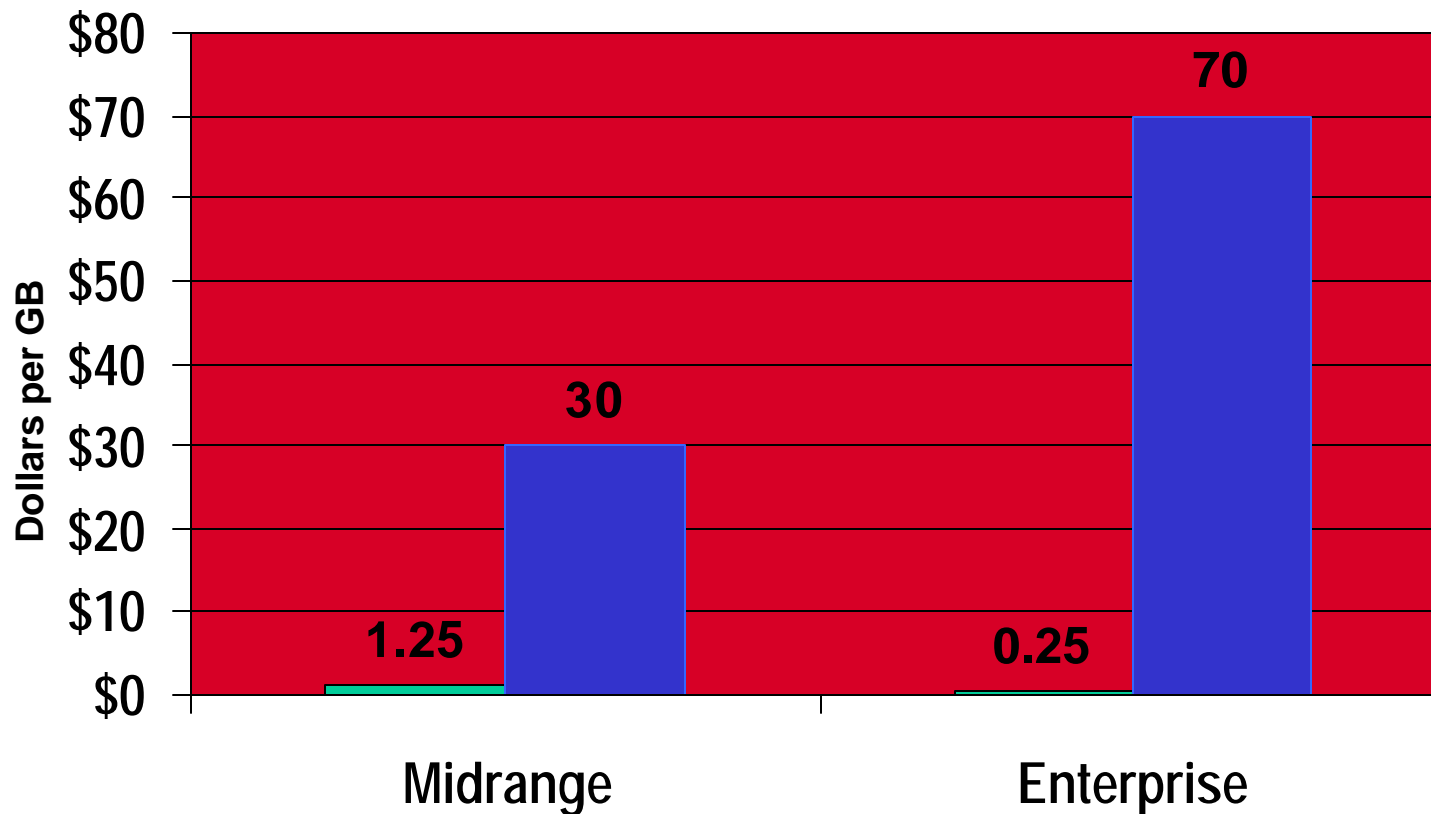


Source: Horison Information Strategies 10-02.
Data are estimates.

■ Tape ■ ATA Disk ■ SCSI Disk



Storage System Retail Cost Estimates

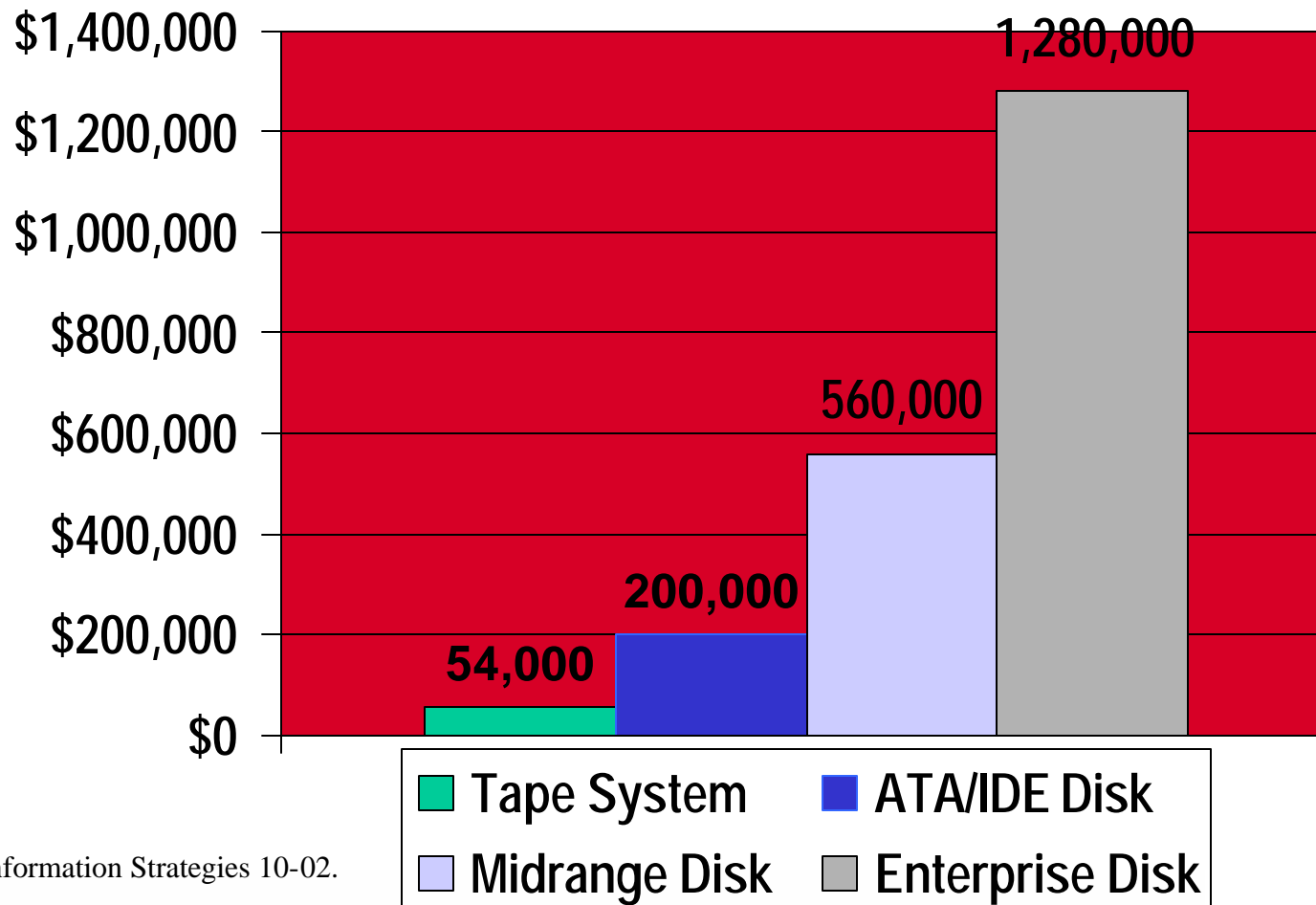


Source: Horison Information Strategies 10-02.
Data are estimates.

■ Tape System ■ Disk System



Storage System Retail Cost Estimates



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WHAT IS THE TRUE MEASURE OF TAPE ?

Things to Consider:

- 1) Open format development and support
- 2) Supply chain assurances
- 3) Matches features and requirements
- 4) A roadmap you can count on
- 5) Widely adopted and supported



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WHAT IS THE TRUE MEASURE OF TAPE ?

1) Open format development and support

LTO Ultrium Program definition:

- ✍ No entry barriers to any company willing to acquire a technology license
- ✍ Input from licensee base on technology development
- ✍ Provide users with superior format options and multiple vendor product alternatives
- ✍ Meet diverse user and tape application needs



WHAT IS THE TRUE MEASURE OF TAPE ?

2) Supply chain assurances

LTO Industry-Leading Licensees

Accutronics Inc.

ADIC

Advanced Research Corp.

Alps Electric Co. LTD

Certance (formerly Seagate RSS)

eMag Solutions

EMTEC Magnetics GmbH

Exabyte Corp.

Fuji Photo Film Co. Ltd.

Fujitsu Ltd./FCPA Intellistor

Hewlett-Packard Co.

Hi/fn

IBM Corp.

Imation Corp.

M4 Data Ltd.

Matsushita Electric Industry

Maxell

Mitsumi Electric Co. Ltd.

Mountain Engineering II Inc.

NEC Corp.

Otari Inc.

Overland Data, Inc.

Phillips Semiconductor Gratkorn GmbH

Plasmon IDE Inc.

Quantegy Inc.

Quantum Corp.

Sony Corp.

Tandberg Data

TDK Corp.

Verbatim Corp.

Note: Includes licensees of LTO generation 1 and or generation 2.



WHAT IS THE TRUE MEASURE OF TAPE ?

3) Matches features and requirements



Certance Ultrium
Viper 200



HP StorageWorks
Ultrium 460



IBM TotalStorage
LTO Ultrium 3580

Data interchange capability with multiple LTO vendor product alternatives and a variety of feature sets



WHAT IS THE TRUE MEASURE OF TAPE ?

3) Matches features and requirements (continued)


- Differentiating tape drive features include:
 - Speed
 - Form factor
 - Interface
 - Power management
 - Speed matching
 - Operator interface
 - Product unique features



WHAT IS THE TRUE MEASURE OF TAPE ?

4) A roadmap you can count on

LTO Ultrium Roadmap

	Generation 1	Generation 2	Generation 3	Generation 4
Capacity Native Compressed	100GB 200GB	200GB 400GB	400GB 800GB	800GB 1.6TB
Data Rate Native Compressed	10-20 MB/s 20-40 MB/s	20-40 MB/s 40-80 MB/s	40-80 MB/s 80-160 MB/s	80-160 MB/s 160-320 MB/s

Roadmap indicates current intent and is subject to change.



WHAT IS THE TRUE MEASURE OF TAPE ?

5) Widely adopted and supported

Market Adoption

- Indicates format acceptance
- Indicates product acceptance
- Can act as a predictor

CY 2002 Results

- Ultrium format has clear advantage



WHAT IS THE TRUE MEASURE OF TAPE ?

5) Widely adopted and supported (continued)

- Licensee input on technology development
 - Benefit of LTO manufacturer's group meetings
 - Provides a forum to receive feedback on the format
 - Enhances the quality of the format
- Compatibility between various manufacturers' products
 - Format compliance verification by an independent entity
 - Format compliance testing to promote interchangeability
 - Upon passing compliance testing licensees can use the Ultrium trademark



WHAT IS THE TRUE MEASURE OF TAPE ?

5) Widely adopted and supported (continued)

- Supporting automation manufacturers include:
 - Quantum|ATL, ADIC, Overland Data, Qualstar, MaxOptix, Exabyte, Plasmon, HP, IBM, StorageTek
- Supporting system OEMs include:
 - Dell, HP, IBM, Sun
- Customer support:
 - Critical for solution availability
 - Critical for serviceability



CUSTOMER CHOICES

- Customer: Worldwide Formula One, Grand Prix Racing Company
- Situation: Company faced the problem of increasing data storage requirements, increasing R&D information as well as business critical application data. Also a primary concern was their shrinking backup window.
- Format Considerations: Speed, reliability, open-format. Lower media costs driven by a competitive, open environment were attractive.
- Resolution: Ultrium format-based library system.
- Results: Critical business data protected 3 times faster. More comprehensive backups. Room to grow.



CUSTOMER CHOICES

- Customer: Electronics Research, Development and Service Provider
- Situation: Significant data growth in a heterogeneous environment (NT, Sun and HPUX); back up to direct attach tape solutions.
- Goal: Create an enterprise-class data recovery system to support its rapidly growing service and SAP implementation.
- Format Considerations: Capacity, roadmap viability, reliability, performance.
- Resolution: Ultrium format based library connected via SAN offering the scalability required.
- Results: Met the goal of creating an enterprise-class data recovery system to support the multiplatform server environment and rapidly growing applications.



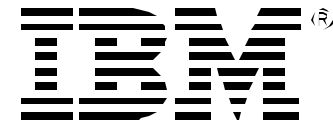
Tape Storage



Data Protection

Business Continuance





Q & A

Bruce Master – IBM

Rick Luttral – HP

Mike Lakowicz – Certance

Debra Redmond - Certance

