

Is it Safe? The business impact of data protection.



Bruce Master
IBM
LTO Program

Linear Tape-Open, LTO, LTO Logo, Ultrium and Ultrium Logo are trademarks of HP, IBM and Quantum in the US and other countries. Other symbols may be trademarks of other companies.

Gartner Data Center - November 2007



Agenda

- Management Concerns
- Impact of a Security Breach
- Data Encryption Methods
- LTO 4 Encryption
- Storage TCO and Energy Costs
- What does LTO 4 technology offer?
- Question and Answer Session
- Next: LTO Customer Experience - DR



Management Security Concerns

- Many government agencies are requiring disclosure of security breaches
 - 32 states in US have security breach legislation
 - Source: www.Privacyrights.org
 - Similar United States federal legislation has been proposed
 - Source: www.epic.org/privacy/bill_track.html
- Industry organizations are also increasing scrutiny of security procedures.
 - Source: Payment Card Industry Security Audit Procedures Version 1
- Over 150 million consumers in US have been notified of potential security breaches regarding personal information since 2/2005
 - Source: www.Privacyrights.org

Protection of consumer information has become a significant business issue



Security Breaches Can Be Costly

- Direct cost of mitigating a security breach
 - Analyst firm estimates the cost per lost record ranges from \$25 to \$150*
- Fines, Penalties, Headaches
 - Security breach costs UK Financial institution nearly £1 million
 - Ohio State Government: stolen tape cartridge with over 200K tax payer SocSec#'s
 - TJX: 45.7M stolen credit and debit cards by network hackers - costs associated with its breach have exceeded \$256 million
- Lost consumer confidence
 - Lost business
 - Publicly held companies also suffer a 5% stock drop in the wake of such a disclosure*



Source: ESG, Enterprise Tape Backup Encryption Requirements for the Banking Industry

Gartner Data Center - November 2007



Management Concerns continued

Compounding the problem:

- **Data growth up to 100% yearly**
- **Over 160B gigabytes created last year**
- **Data archive and disaster recovery are paramount**
- **Managing TCO including energy costs and the impact on the environment is a must**

*“Estimate that for every dollar spent on computer hardware, another 50 cents is spent on energy.”**



*Source: IDC.

Gartner Data Center - November 2007

Best Practices in Data Security*

- SAN - secure against unauthorized access
 - LUN Masking
 - Zoning
 - Port binding
 - Virtual or logical SANs
 - Fibre Channel Security Protocol (FCSP)
- Data at rest – encrypt sensitive tape data that will or could be transported off-site

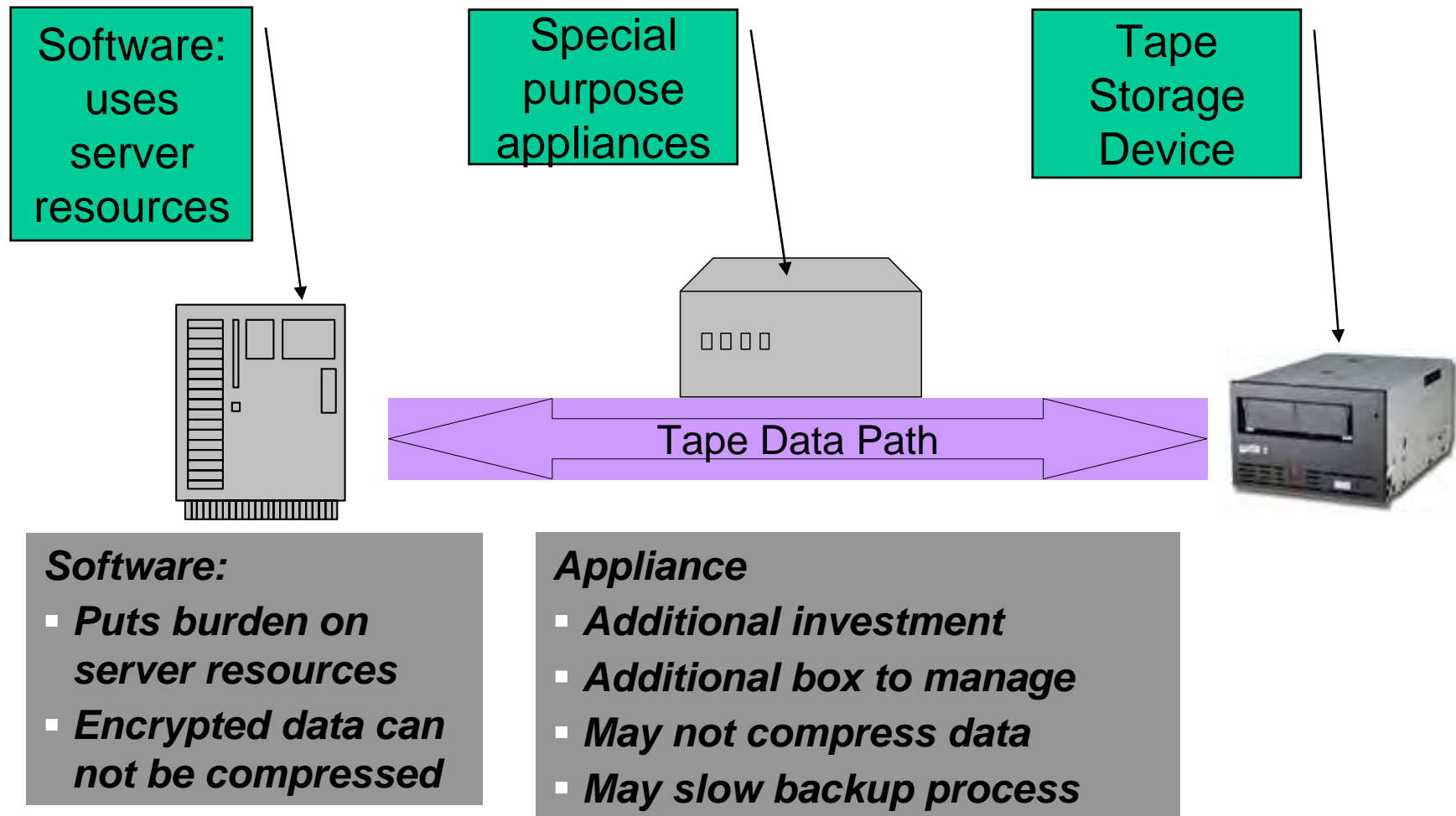


Source: Forrester

Gartner Data Center - November 2007



Data Security - Encryption Methods



Tape Encryption – The Best Option

- **High performance**

- Compress the data then encrypt
- Encryption at tape drive speeds
- Off-loads encryption task from server

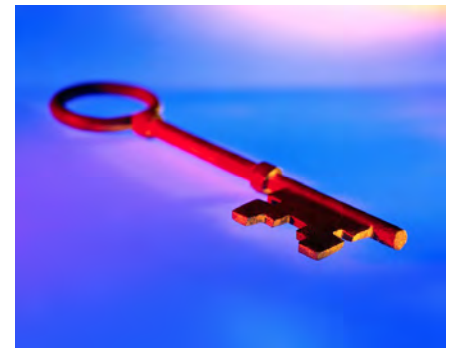


- **Cost effective**

- Leverages existing tape automation infrastructure
- Can eliminate need for encryption appliances

LTO Ultrium 4 Program Standards Specification

- AES-256 bit symmetric data key is used to encrypt data
- Supports T10 SSC-3 standards based security protocol commands
- Symmetric data key is stored in key store



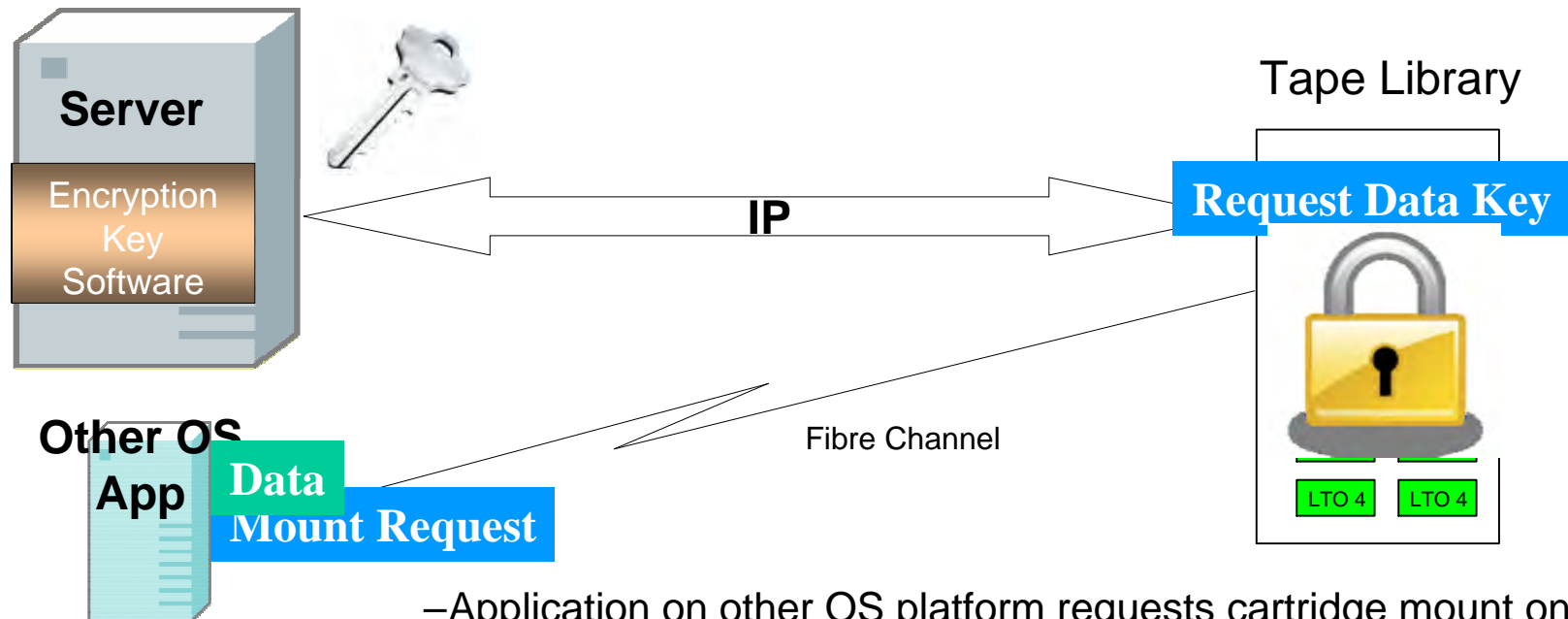
LTO Ultrium 4 Can Help Secure Your Data

Tape Drive Encryption Process Overview



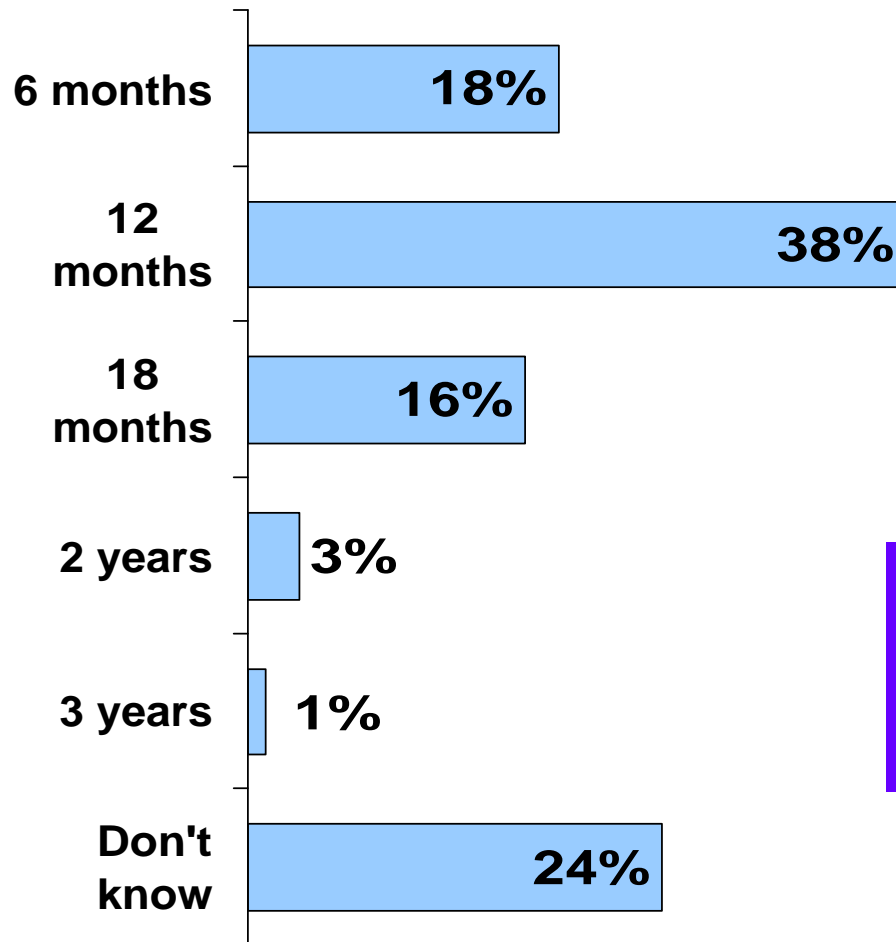
1. AES 256 bit encryption data key provided to tape drive
2. Data is compressed then written to tape cartridge in encrypted form
3. Encrypted data helps protect sensitive information
4. Key management is “key” and is offered by system suppliers

Example – Centralized Encryption Key Management Using a Library and Key Software



- Application on other OS platform requests cartridge mount on library with encryption policy “ON” for vol/ser range requested
- Library routes encryption key request to encryption key software
- Encryption key software provides key to the drive via the library and can be transparent to other OS server tape applications
- Application on other O/S begins write process
- Drive compresses data then encrypts data

Survey: Encryption of Tape Backups



Base = All respondents (n = 206)

“Will you be required to encrypt your tape backups within the next...?”

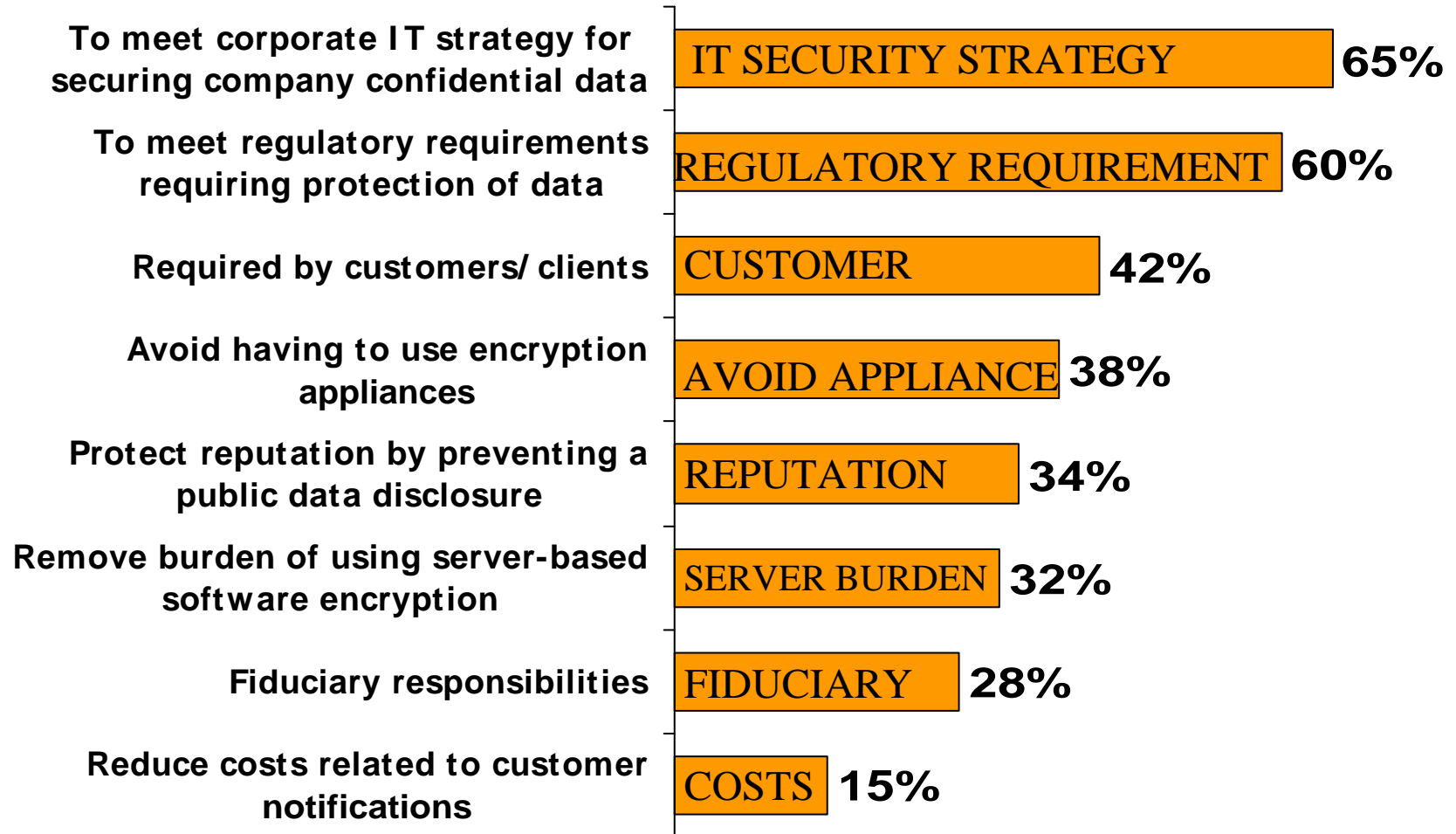
72% expect to encrypt tape data within the next 18 months.

Source: Fleishman-Hillard, Inc. Research – Nov. 2007

Gartner Data Center - November 2007



Motivations for Encrypting Data Stored on Tape



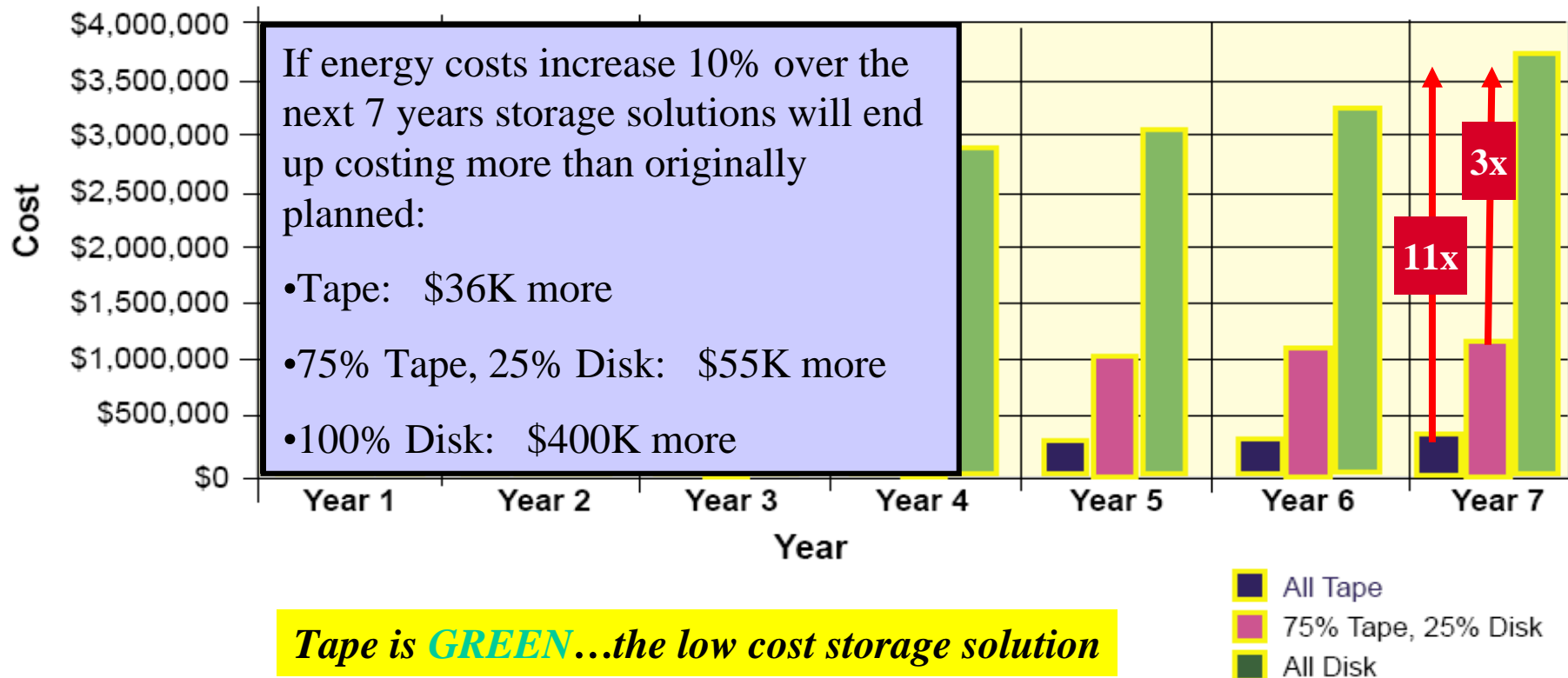
Source: Fleishman-Hillard, Inc. Research - Nov. 2007

Gartner Data Center - November 2007



LTO3 Tape Library vs. SATA Disk System TCO

Cumulative Cost of All Tape, 75% Tape - 25% Disk, and All Disk*



“...a blended solution of disk and tape where tape is used as much as is feasible can help to significantly cut power and cooling costs.” David G. Hill, Mesabi Group, July 11, 2007

* Source: Data Mobility, “Is tape really cheaper than disk?” www.ultrium.com/whitepaper
 Note: Figures are estimates and subject to change. User results may vary.



Backup and Archive Best Practice



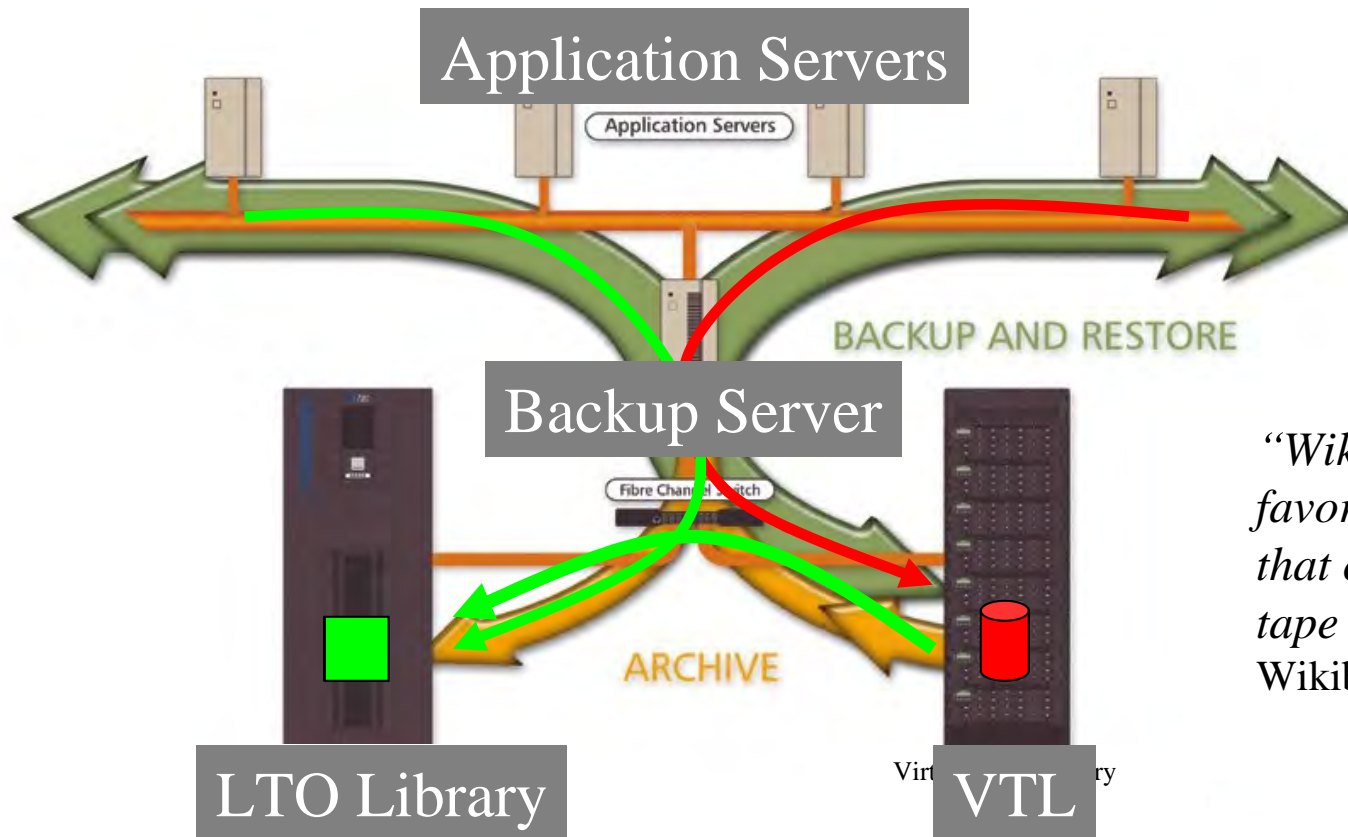
- Protect Data - Strategize
 - Have multiple degrees of protection: at least 3 copies of data in different locations and one out of region for DR*
 - Have technology diversification: copies on different forms of media to avoid a media or system process disaster*
 - Have I/O isolation: at least one copy offline to avoid intentional or unintentional corruption*
 - Protect access to data at rest and in transit
- Manage active data, active archive and fixed archive data appropriately - Virtualize
 - Send low demand active archive or fixed-deep archive data directly to tape
 - If SLA goals demand faster recall performance for active data consider disk based system as a backup target for high demand applications
 - When disk fills, move retention archive data to tape
 - Consider data de-duplication to reduce disk storage requirements
- Control TCO and energy consumption - Optimize
 - Move archive data to lower energy consuming storage (tape is up to 20-100x lower energy consuming than SATA disk)
 - Employ server, controller and storage energy saving strategies

*Source: David Hill, Mesabi Group

Gartner Data Center - November 2007



Tape and Disk are Complementary for Optimal Performance, Archive, Data Protection and TCO



“Wikibon community favors hybrid solutions that combine disk with tape” Bert Latamore, Wikibon, Sept. 6, 2007

Customers may require fast access to data as well as data protection and low costs:
A tiered hybrid solution that integrates disk and tape may address these.

What Media/Analysts Are Saying About LTO-4 Tape



“Given the well established growth in data being stored by organizations, *the ability to cost-effectively store large quantities of historic data* for the duration of the many compliance and/or best practices mandates in effect tends to *favor tape-based solutions.*”

- Clay Ryder, Segaza

“To paraphrase Mark Twain, ‘*The reports of tape’s death have been greatly exaggerated.*’ In fact, the Linear-Tape-Open (LTO) Program announcement of the LTO Ultrium format generation 4 specifications is evidence that tape technologies are alive and well.”

- David Hill, Mesabi Report, Pund-IT, and Infostor

“*Is this announcement significant to IT customers today? Definitely. ...start planning now, for LTO-4 deployments can enable customers to fully regain their IT competitiveness in data protection operations...*”

- Ideas International

“LTO 4 will also inherit WORM (write once read many) capabilities from its predecessor, but *encryption is the new killer feature* that makes the new generation so much more interesting.”

- Infoworld



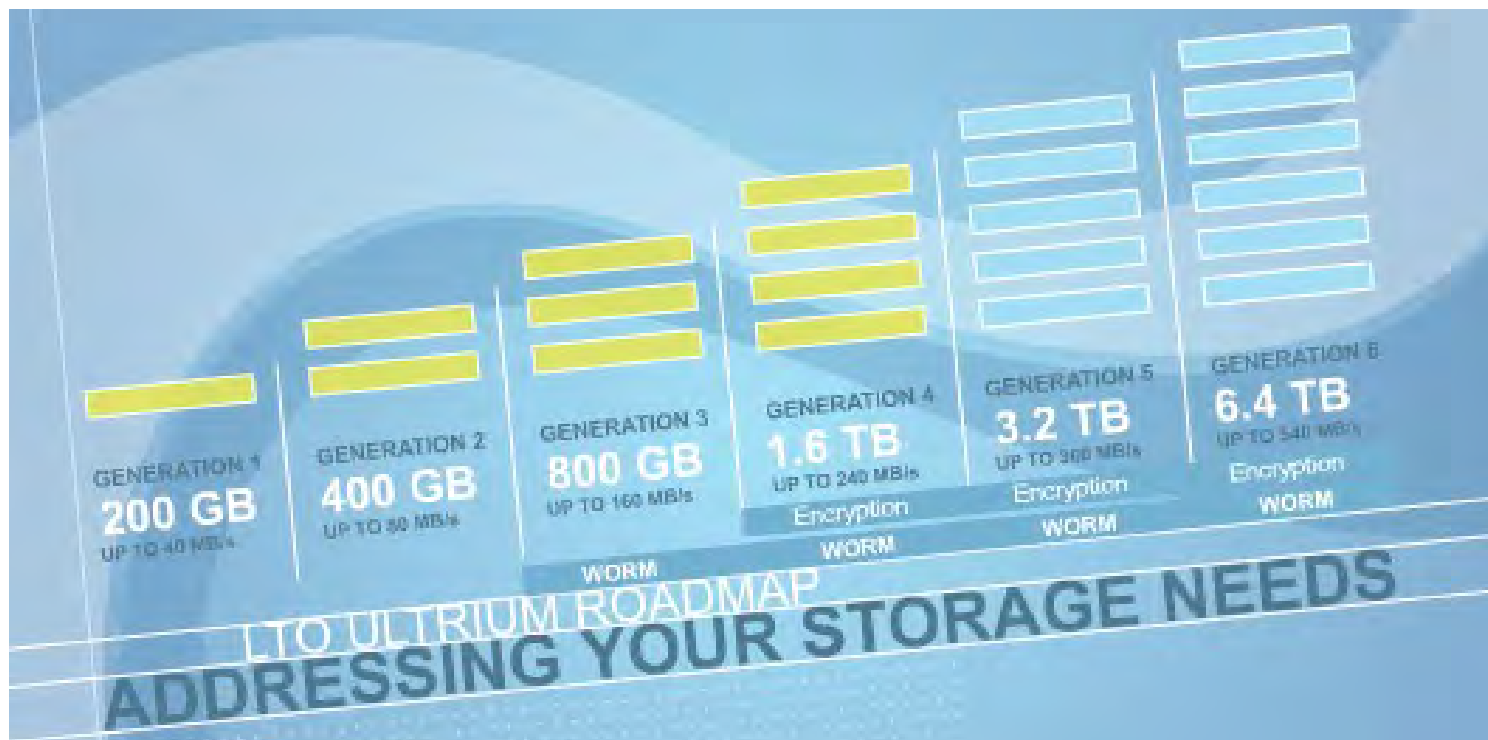
Upgrade to LTO 4 Technology

- **LTO 4 can dramatically increase your GB per slot with 800GB per cartridge native**
 - 2X over LTO 3
 - 4X over LTO 2
 - Helps avoid library expansion costs
 - Protects current library investment
- **LTO 4 can improve productivity with up to 120MB/s native**
 - Up to 4X the speed of LTO 2
 - Up to 1.5X the speed of LTO 3
 - Can help you do more with less
- **LTO 4 can help secure your sensitive data with tape drive hardware encryption**
 - Can compress and encrypt data at drive speeds
 - Helps avoid security breach recovery costs and PR problems
- **LTO 4 can read back 2 Gen's, write back 1 Gen**
 - Eases implementation
 - Helps to protect technology investments



A Solid Plan for Addressing Storage Needs

- LTO Technology Roadmap



The roadmap represents intentions and goals only and is subject to change without notice.

LTO Marketplace Acceptance is High

Nearly 500,000 LTO drives shipped in 2006
90% shipment share of midrange tape drive segment*

Over 2M LTO drive shipments



Over 80M LTO cartridge shipments

Reliable Data Archive and Protection

*Based on 2006 shipments in a 2007 analyst report

Gartner Data Center - November 2007



LTO Products Can Help Address IT Concerns

- LTO 4 Hardware Encryption
 - Compresses the data and then, Encrypts at drive speeds
 - Helps avoid burden on server
 - Helps remove need for encryption appliance
 - Helps to avoid costly security breaches
 - Helps to protect valuable company image, customer relations and minimize risk
- Can archive and help protect critical data
- Can help provide low TCO and low energy consumption



Thank You!

LTO Ultrium Technology

*Helping to reduce storage and
energy costs and protect data!*

Go to ultrium.com
For a copy of this presentation and lots more!

*Visit the LTO booth and register to win a
Nintendo Wii Game Console and Game!*



Question and Answer Session

