

Meeting the Data Protection Demands of a 24x7 Economy

Steve Morihoro

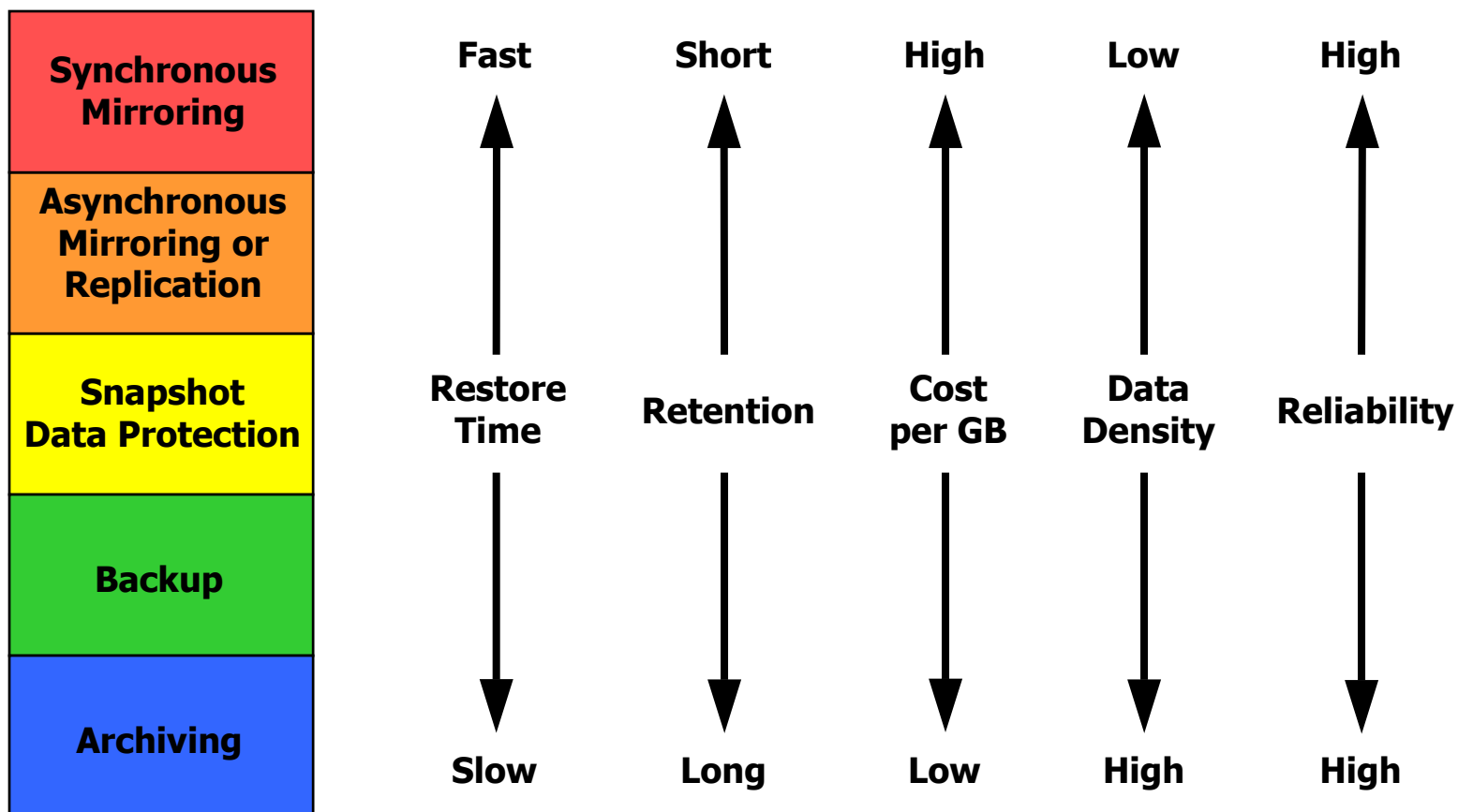
VP, Programs & Technology

Quantum Storage Solutions Group

steve.morihoro@quantum.com



Data Protection Spectrum

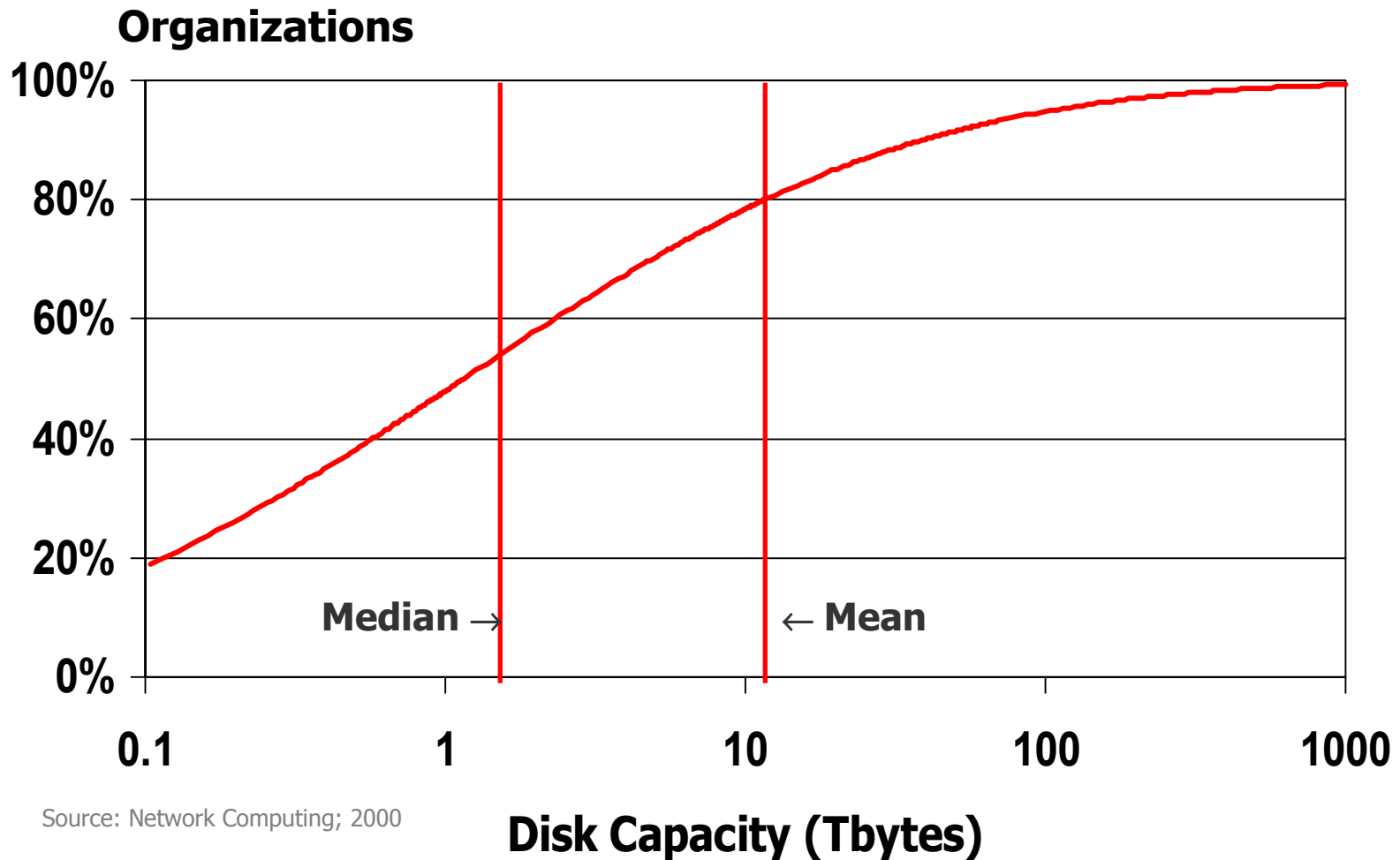


Demand for Backup is Growing

- Despite the economic cycle, the core rate of data generation continues to be high
 - Reducing cost of data generation
 - Rich media
 - Supply-side economics
- Data protection is becoming more critical for all organizations
 - Well over 99% of business information is digital
 - Most new business information is born digital

The amount of data that will require protection will continue to double annually

There's a Lot of Data to Protect



Backup is Pervasive

- Backup is the primary means of data protection for 90% of IT organizations
- Backup complements other data replication techniques such as mirroring for high-performance IT organizations
- Backup provides affordable, but limited, alternative to formal disaster recovery capability for small IT organizations

Backup is Big

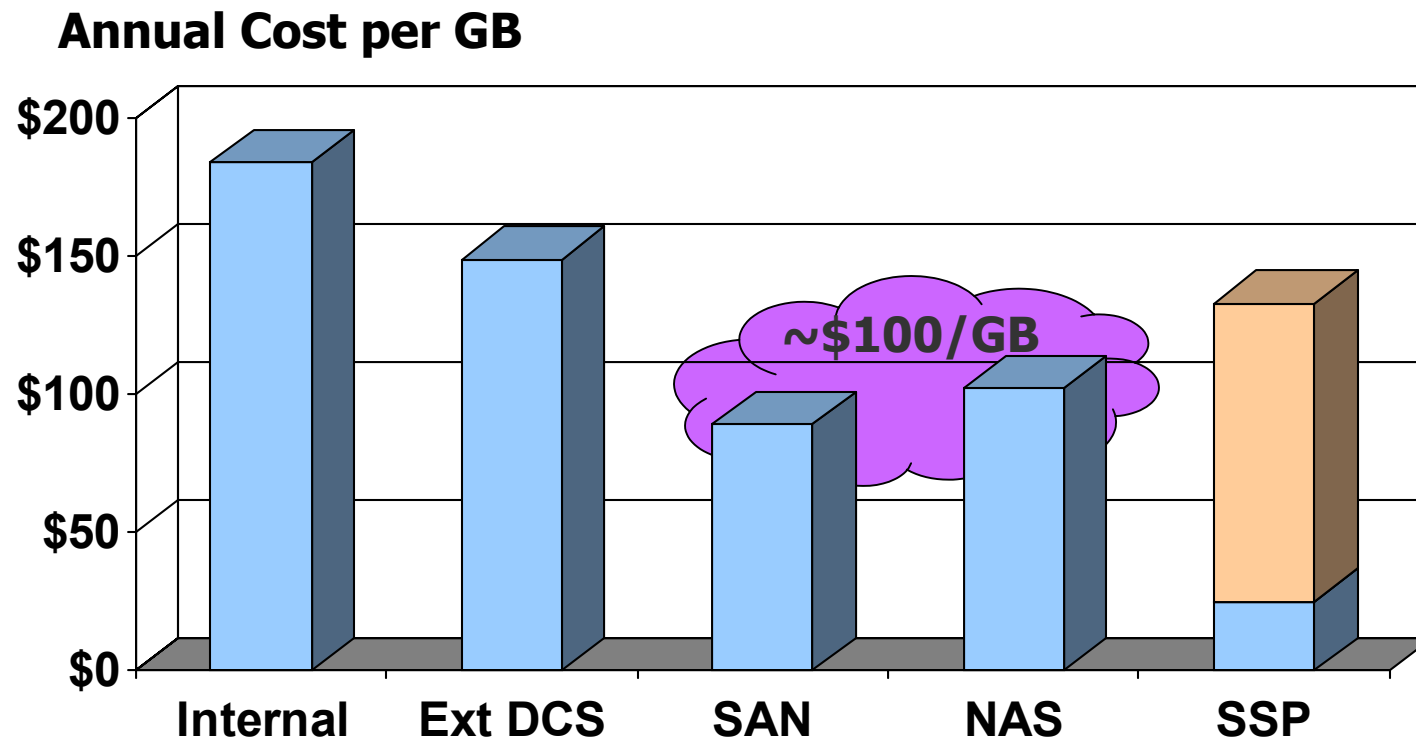
- Data Protection is 30% of the total cost of data ownership
 - Economic impact: \$100B - \$150B
- Data Protection hardware, software and services
 - \$44B market in 2000
- Backup is 30% of the Data Protection market
 - \$13B in 2000
- Significant presence
 - Tape library installed base is over 300,000 units

Backup is Changing

- Scale is increasing rapidly
 - In 1998 1 in 6 had more than 1TB of on-line disk
 - In 2001 1 in 2 had more than 1TB of on-line disk
- Backup moved to the network even faster than primary storage
- NDMP enabled serverless backup
- Ad hoc disk-based techniques have emerged
 - Backup staging on primary disk
 - Replication on NAS
- Recent emphasis on vaulting and archiving

Backup is “Killer App” for SANs

- Data protection is the largest single element of data TCO
- Capital costs are less than 20% of data protection cost



Source: Gartner Group & SSP Quote

Challenges in Backup Today

- Backup is mission-critical: data is more voluminous, valuable and vulnerable

BUT

- Backup takes too long
- Low confidence in completing backup
- Restore takes too long

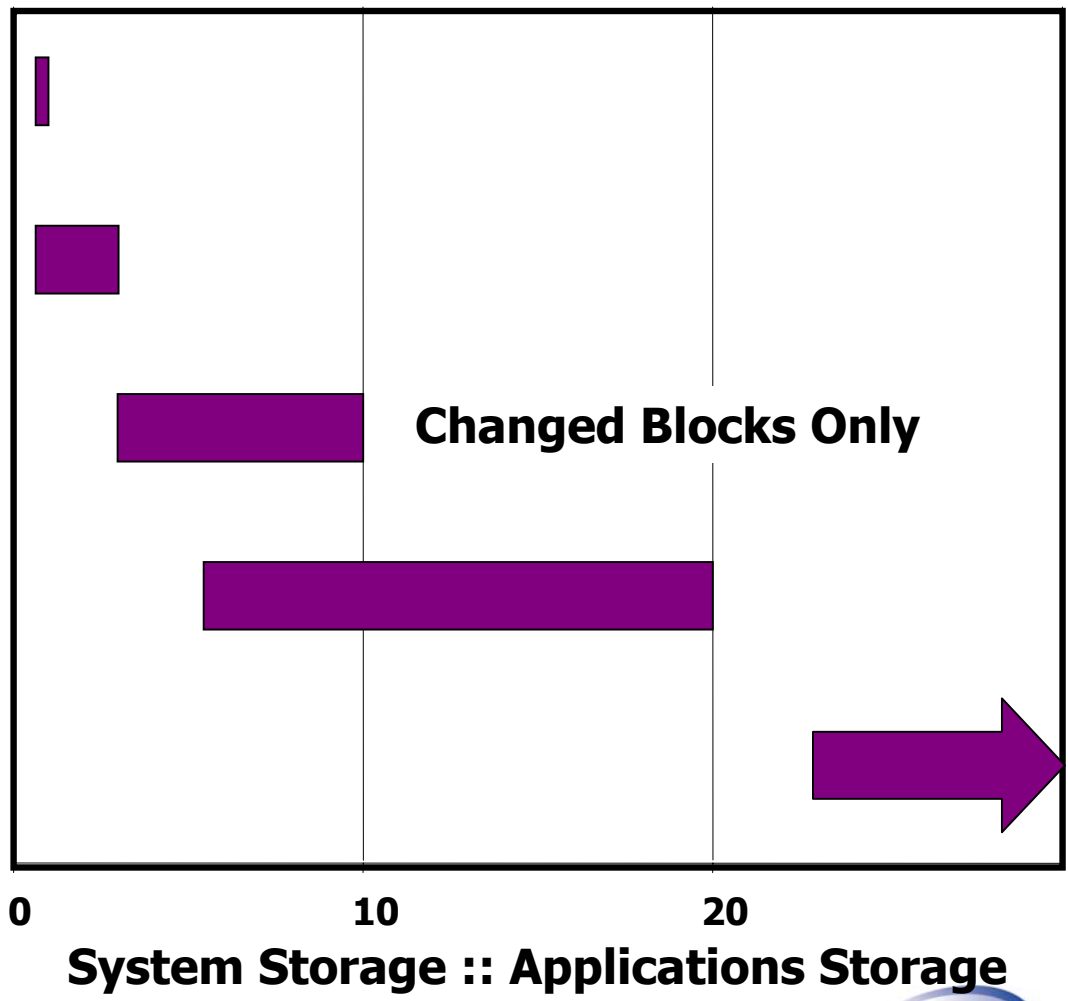
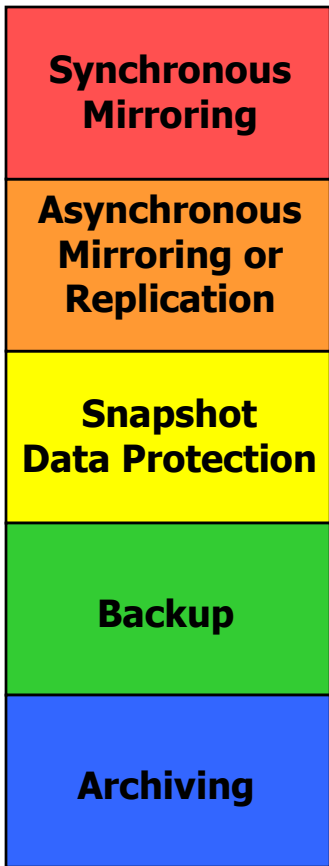


AND

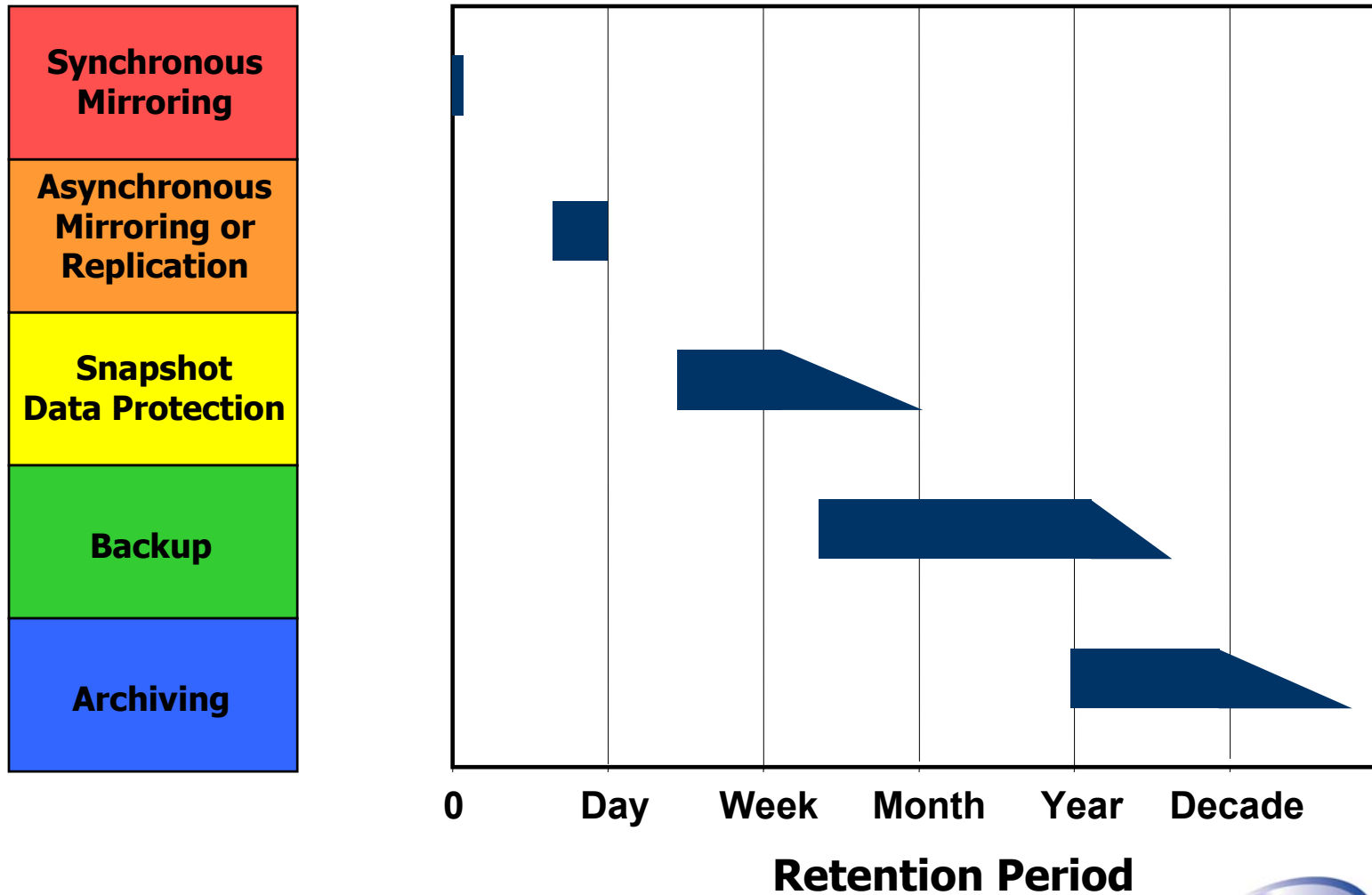
- Since data protection is the largest single component of data ownership cost, must preserve existing backup investments



Multiple Versions of Backup Data

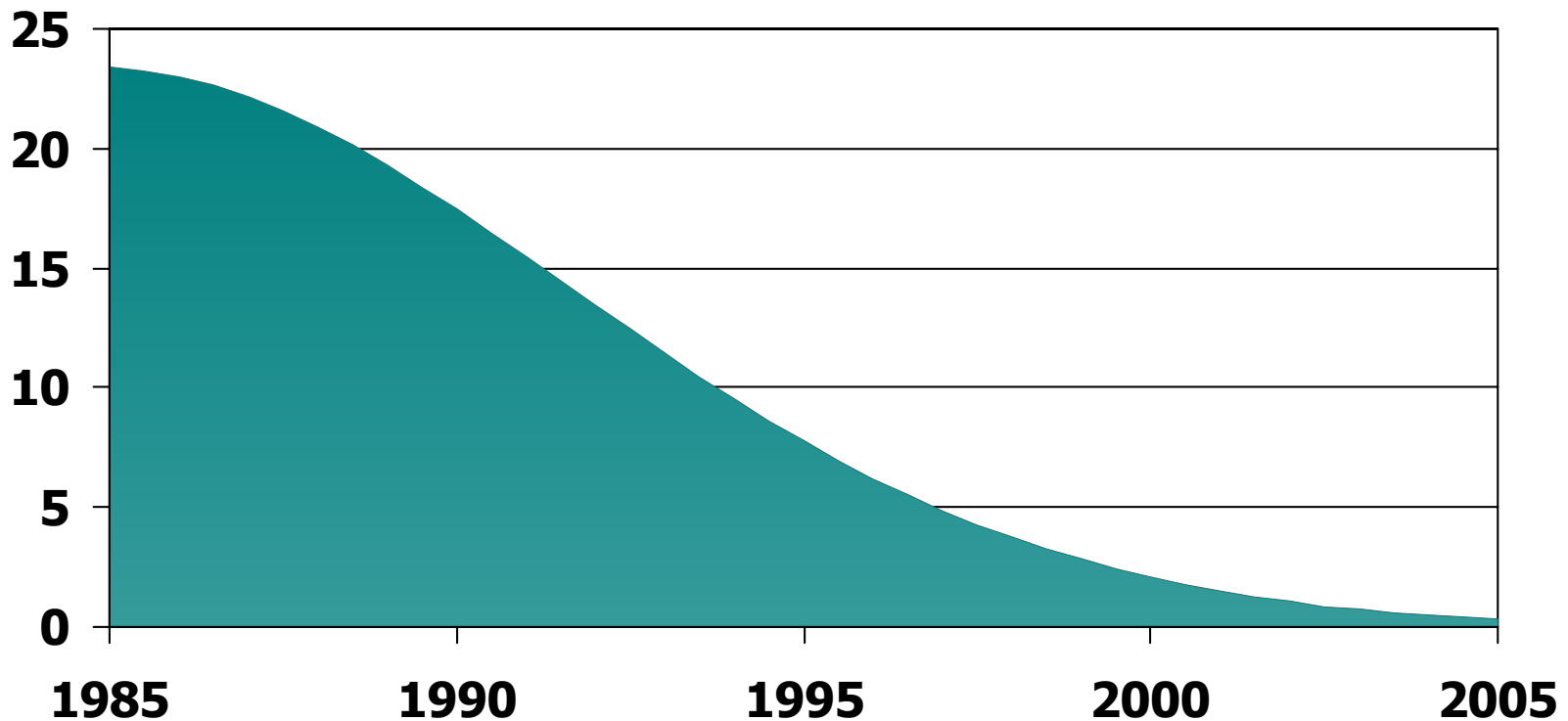


Backup Data Kept for Years

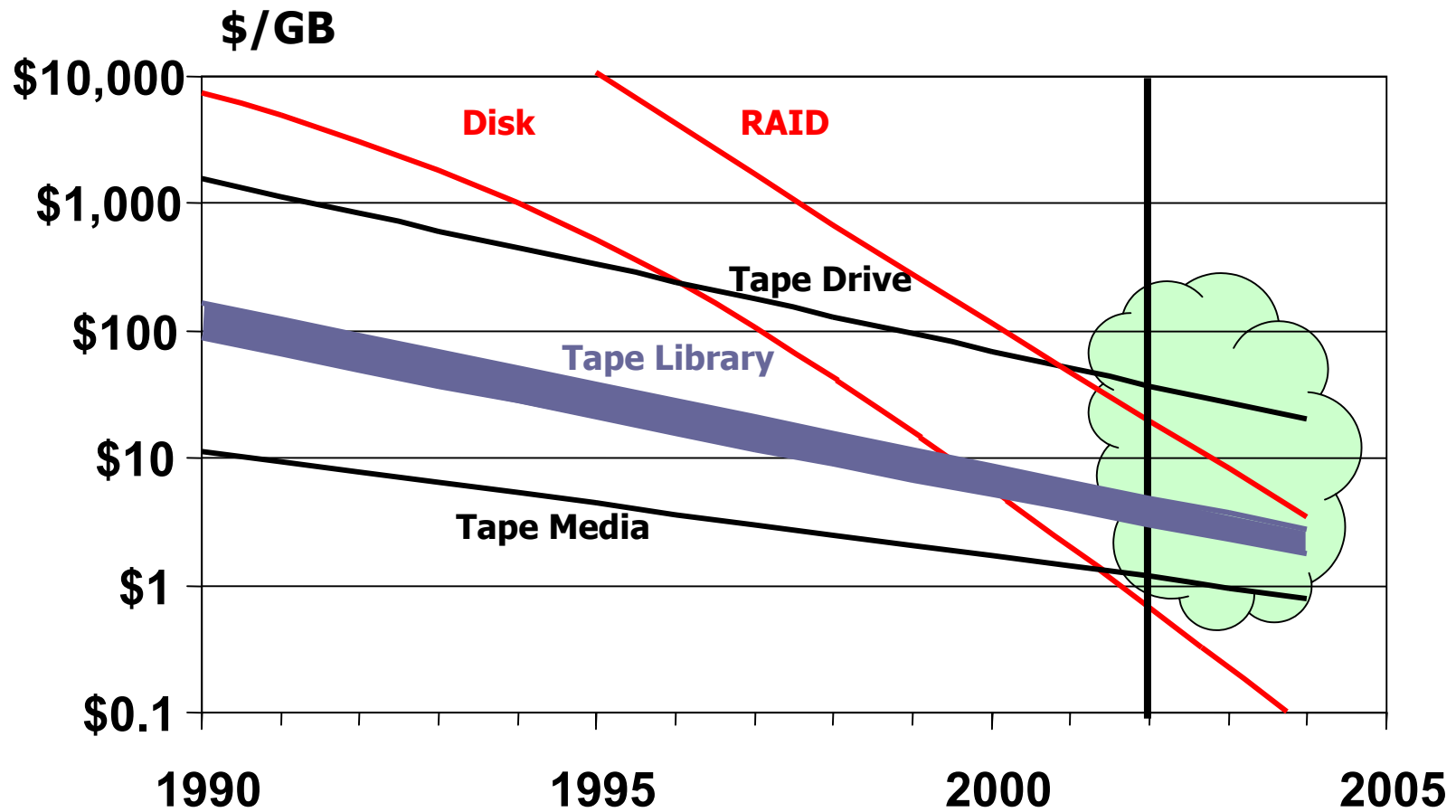


Disk and Tape are Converging

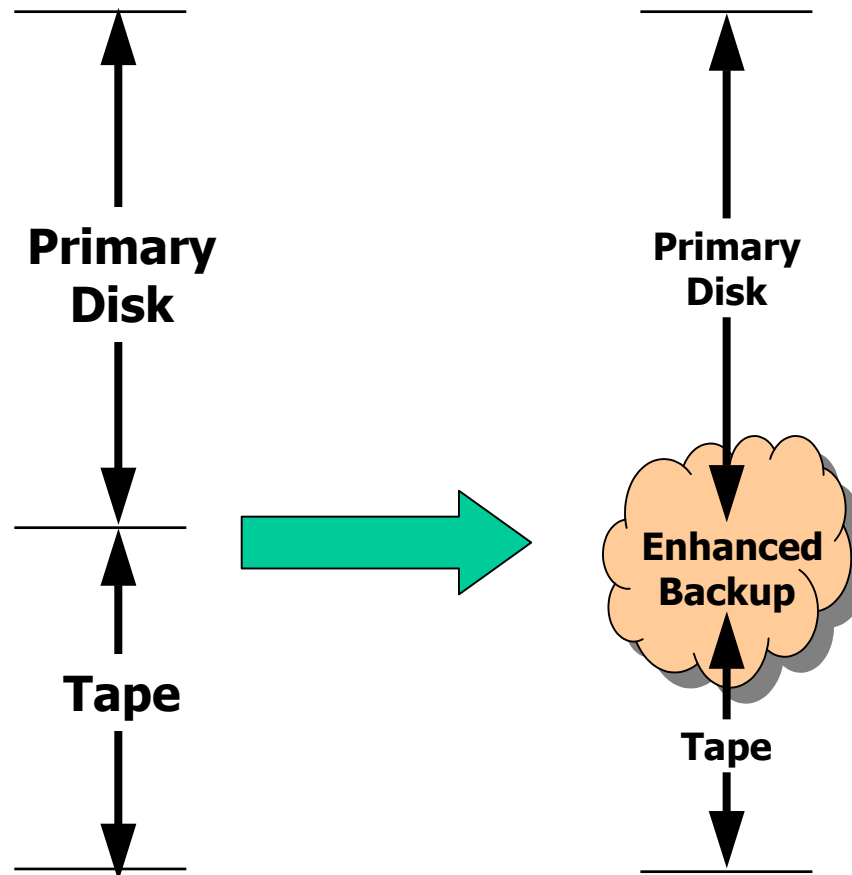
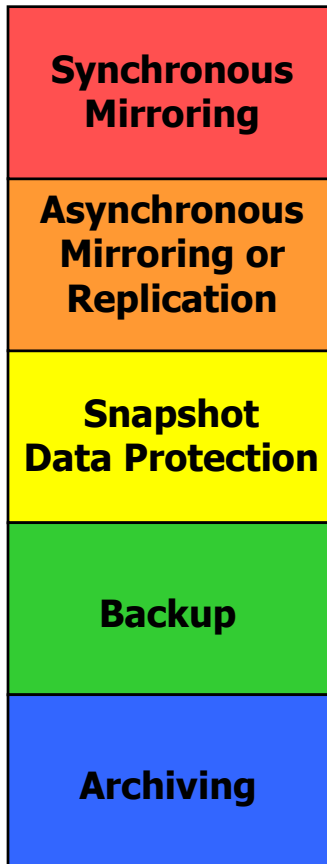
Capacity Ratio: DLTtape Cartridge to System Disk



Disk and Tape Costs Converging



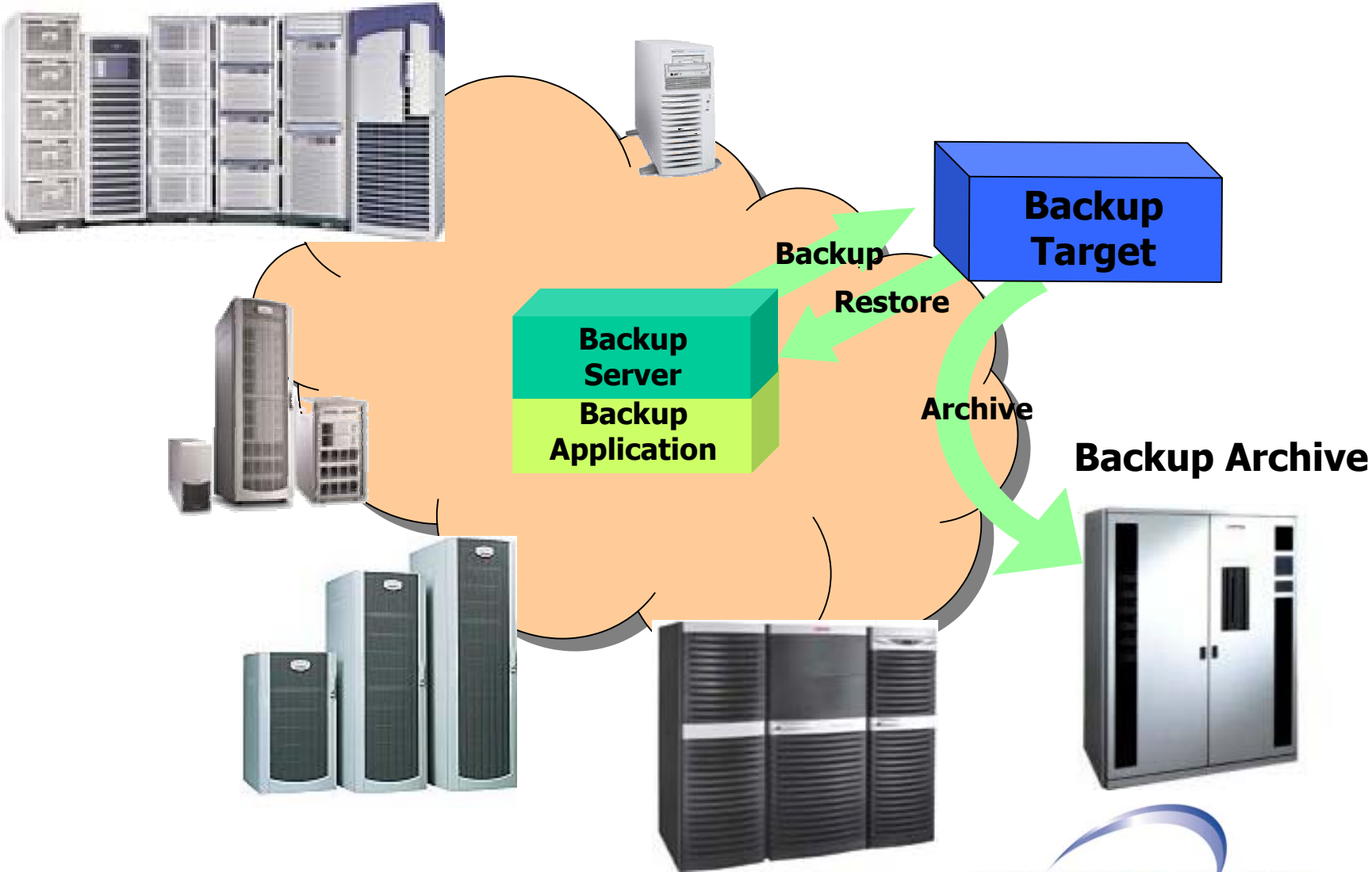
Disk Emerging for Backup



Enhanced Backup

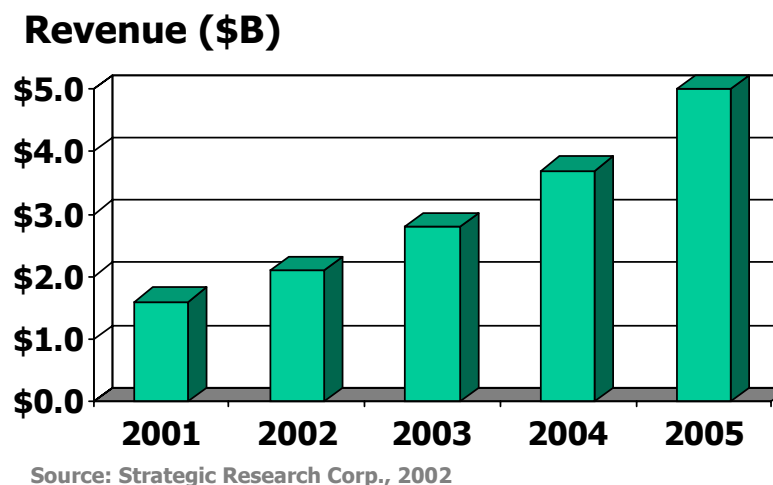
- Backup solutions include two distinct functions
 - **Backup Target** : Interface to the on-line data system
 - **Backup Archive** : Preservation and management of backup records
- These functions are not separable in traditional tape backup solutions
- Enhanced Backup augments the backup model by utilizing
 - Disk-based systems for the Backup Target
 - Tape-based systems for the Backup Archive

Enhanced Backup Architecture



Market Projection

- Strategic Research has defined the *Backup Array*: equivalent to the EBSI *Backup Target*
 - Virtual Tape
 - Backup-to-Disk
 - Point-in-Time Backup
 - Snapshot Backup
- \$1.6B in 2001
- 34% CAGR



Enhanced Backup Opportunities

- **Addresses Key Customer Issues**
 - Minimizes time for backup
 - Improves confidence of completing backups
 - Reduces latency to restore
- **Flexibility**--Establish different quality of backup service on a per application basis
- **Scalability**--Scale the backup target to extend higher quality of restore service
- **Improved DR Protection**—Cost-effective tape cartridges can be moved off-site with minimal delay
- **Improved System Reliability**—Minimizes exchanges of removable media and maximizes streaming of tape drives

Software Considerations

- Multi-target support
- Cartridge copying/cloning
 - Dual cartridge residency
 - Flexible cartridge characteristics
- Backup Target / Archive Target coordination
 - Data Migration
 - Heterogeneous Device Support
 - Media Conversion
 - System Optimization
- “Serverless archive”
- Synthetic full backup
- MAN/WAN integration
- Backup data post processing

Enhanced Backup Solutions Initiative

- Open industry forum dedicated to improving and extending the backup model of data protection through education, communication and coordination activities
- Initial focus
 - Integration of disk-based backup targets, network storage systems and storage device virtualization into backup solutions
 - Publication of co-authored white papers and promotion of best practices for backup
- Clearinghouse for questions and inquiries for individual backup users or user groups

Summary

- The continued growth of digital data will drive demand for backup data protection
- Reliability, scalability, cost, and physical density will continue to be important for backup solutions
- Tape has excellent, cost-effective archival characteristics and will continue to play a significant role in backup
- Disk-based backup targets will complement tape in enhanced backup solutions for critical data protection applications