

Emerging Technologies Panel

RB Hooks, III

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STORAGETEK

NASA/IEEE MSST 2004

12th NASA Goddard/21st IEEE Conference on
Mass Storage Systems & Technologies

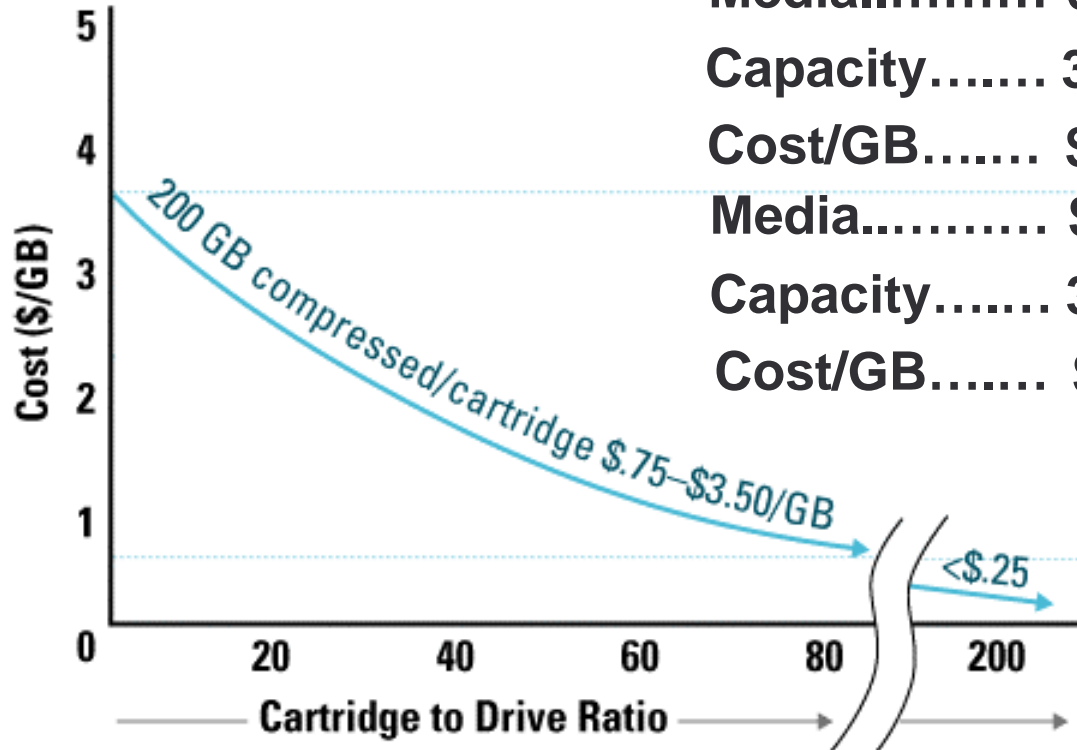
The Inn and Conference Center
University of Maryland University College

Adelphi MD USA

April 13-16, 2004



Automated Tape Pricing



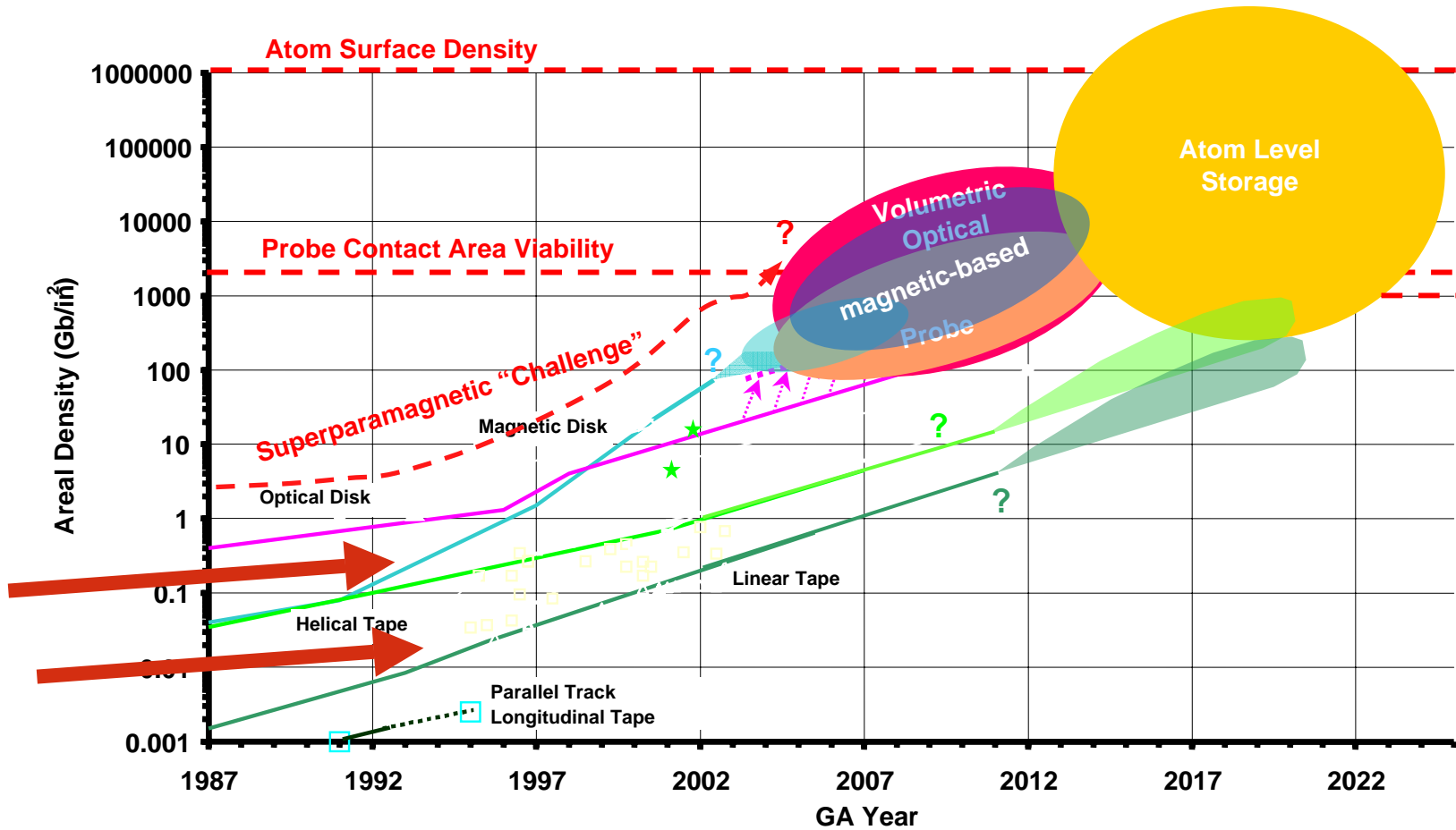
Library.....	\$170k
Drives.....	\$224k (8@\$28k)
Media.....	\$375k (6000@\$62.50)
Capacity.....	360TB (60GB native)
Cost/GB.....	\$2.14
Media.....	\$1,260k (18000@\$70)
Capacity.....	3,600TB (200GB native)
Cost/GB.....	\$.46 (.00046/MB)

$$\text{Tape Pricing Ratio} = \frac{\text{Number of Cartridges}}{\text{Number of Drives}}$$

Source: Horison Information Strategies

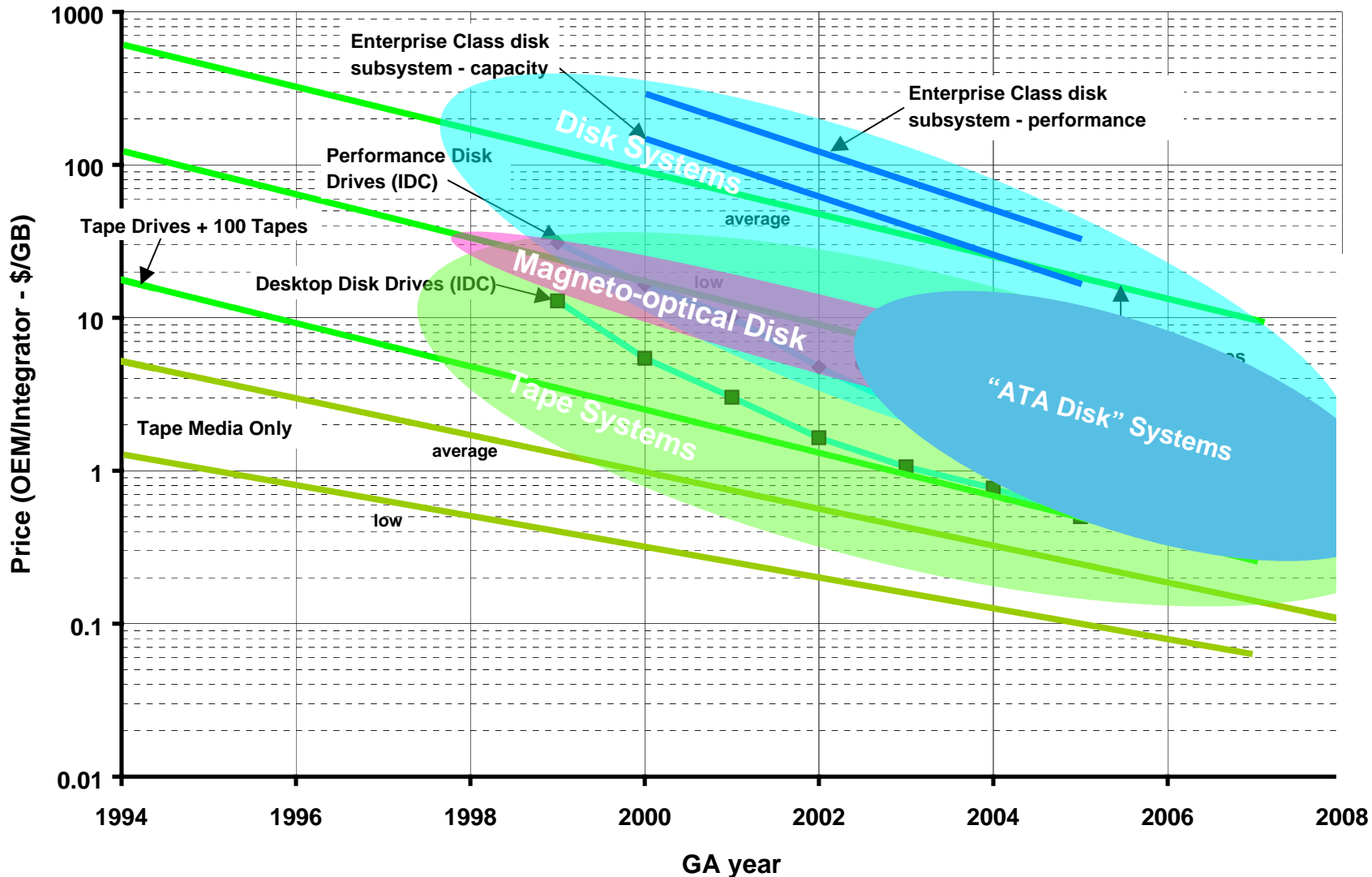


Advanced Areal Density Trends

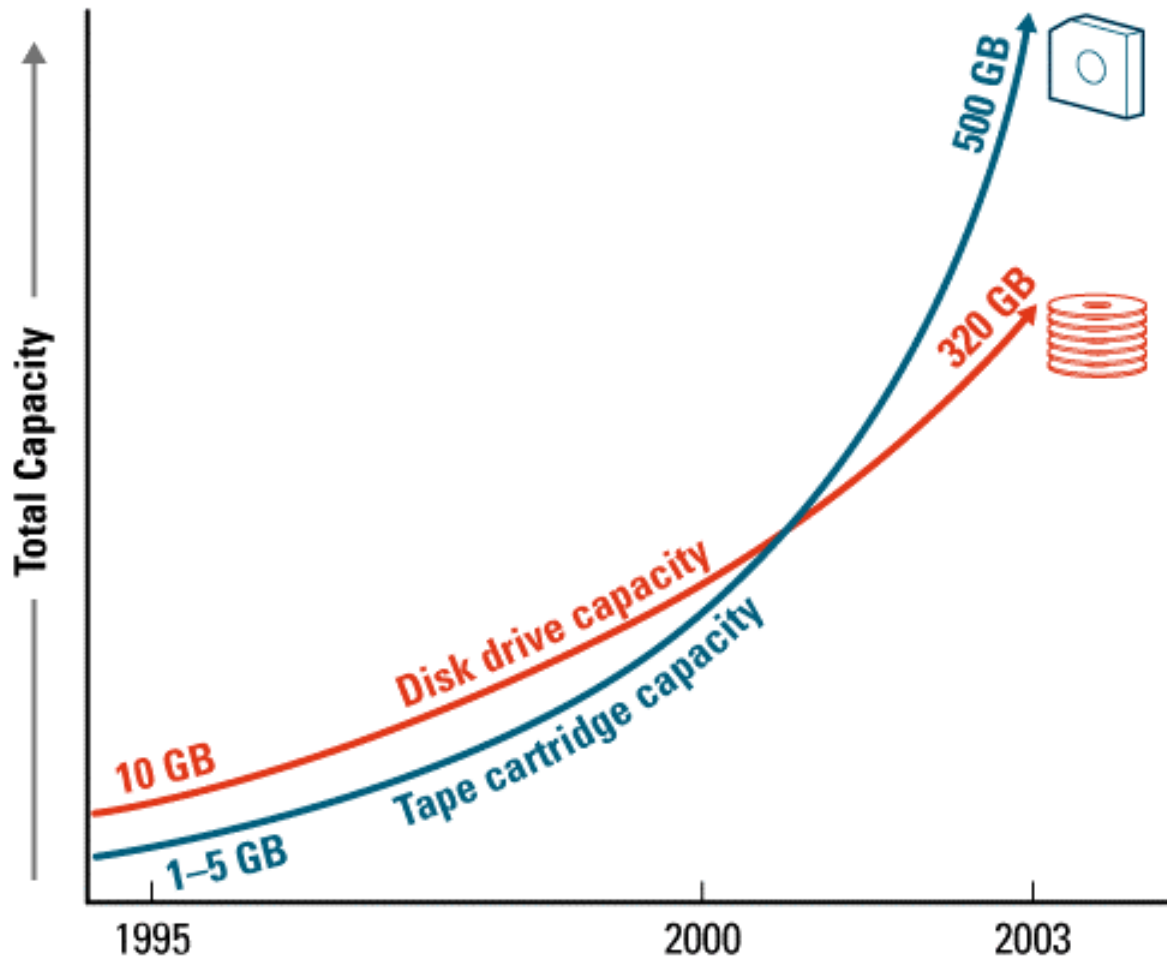


Storage Subsystem Price Trends

(OEM price/equiv. unless otherwise noted; no capacity compression or utilization factors)



New Rules for Disk Drive and Tape Cartridge Capacity

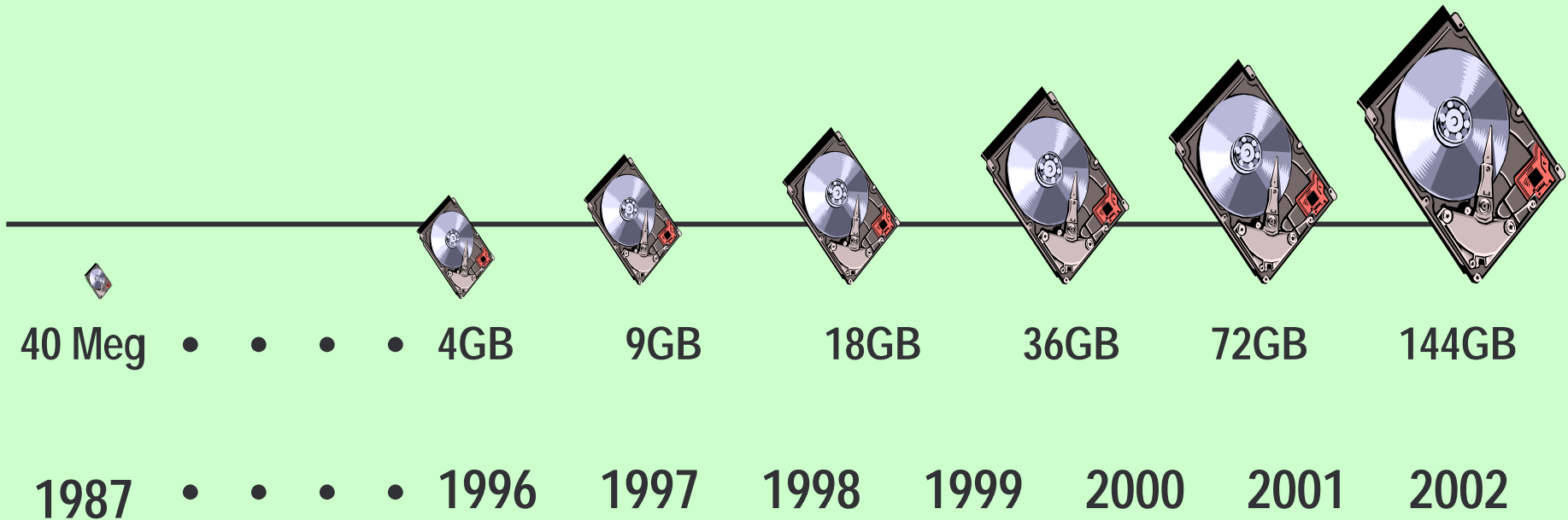


- > Tape volumetric efficiency growing faster than disk areal density
- > Disk utilization falling as capacities increase. This is not necessarily true of tape
- > Tape supports one user per drive. Disk supports multiple concurrent users per drive
- > Scalability means capacity and performance
- > Tape cartridges have greater capacities than disk drives

Source: Horison Information Strategies



Last 15 Years has Produced 12 Generations of Hard Drive Technologies



15 Years in StorageTek's Tape Automation Portfolio



Same ACS

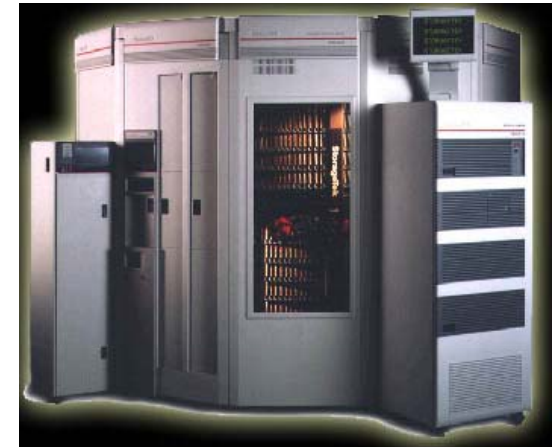
Storage Capacity - 1000 X

Robot Speed - 4 X

Bandwidth - 200 X

2 Generations of Media

3 Generations of Transports

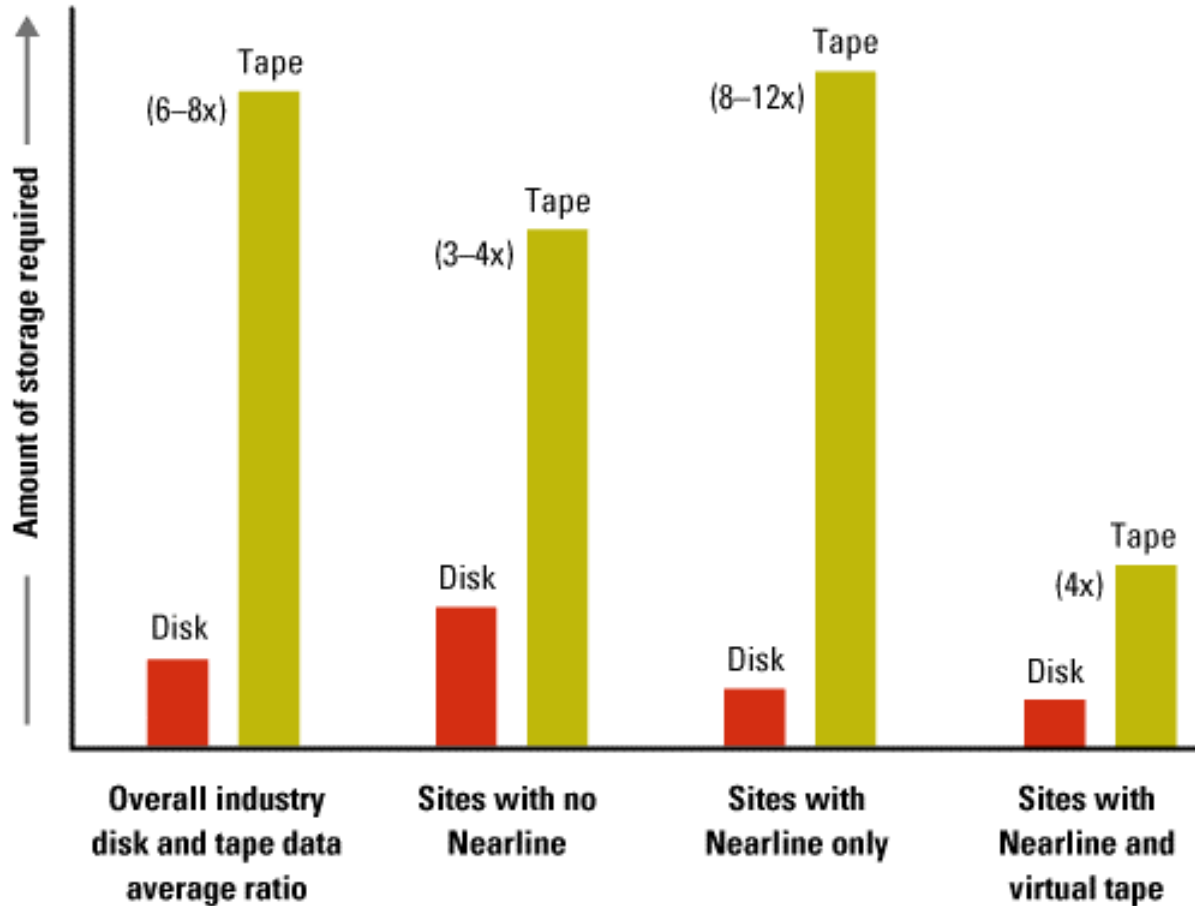


1987 6000 Slots @ 200 MB
Max 16 Transports at 3MB/Sec
Shared across 4
110 Exchanges/Hour
Total Capacity – 1.2 TB
Uncompressed

2002 6000 Slots @ 200 GB
Max 80 Transports at
30MB/Sec Per Transport
450 Exchanges/Hour
Total Capacity – 1.2 PB
Uncompressed



The Nearline Effect



What you should expect

- > Nearline solutions reduce disk requirement
- > Sites without Nearline use more disk than the industry norm
- > Sites with Nearline consume less disk than the industry norm
- > Sites with Nearline and virtual tape consume less disk and less tape than the industry norms

Source: Horison Information Strategies



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