



Storage Virtualization

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- Array based (ubiquitous now)
- Block level (In-band and out-of-band)
- Switch based
- File virtualization (virtual/global name space or virtual mount points)
- HBA virtualization

Why virtualize at the block level?

- Enhanced Storage Personnel Productivity
 - Create a single point of control, administration and security for disk volumes
 - Move, add or change physical disks without requiring application outages
- Improved Application Availability
 - Eliminate many of the causes of storage-related downtime
 - Create a common platform and API for advanced copy services
- Optimized Storage Resource Utilization
 - Aggregate smaller islands of spare disk capacity and transparently reallocate to new servers or applications
 - Utilize appropriate storage tiers based upon QoS or SLA requirements
- Cost Effective and Achievable Business Continuity and Disaster Recovery Infrastructure

Two Years of Growth on the Chicago Data Center SAN

	December 2004 TB	December 2006 TB	CAGR
Virtualized SATA Disk	14.0	72.8	128%
Virtualized 10K RPM Fibre Disk	8.0	32.9	103%
Virtualized 15K RPM Fibre Disk	7.2	11.2	25%
non-virtual 10K RPM Fibre Disk	2.4	4.8	41%
	31.6	121.7	96%
Staff	2 Partial	1 Partial	-29%