

# The Virtues of Virtual Storage

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Virtual storage saves money normally wasted on tedious and time consuming storage management functions and inefficient utilization of physical disk resources. Completely abstracting logical storage from physical storage simplifies the storage management equation. Removing the bonds of managing physical resources such as disks as well as the structural constraints of device-level data protection [e.g. RAID characteristics] both significantly expands the range of individuals who can administer storage and substantially reduces the time required of the storage administrator. Configuration and provisioning of storage is simplified to the point that little, if any, storage expertise is required. Virtual volumes, allocated from a single, easy-to-manage pool of storage, increase disk utilization. The bottom line is that Virtual Storage saves real dollars.

A distinction needs to be made between the commonly used definition of storage virtualization and virtual storage. Storage virtualization is typically defined as functionality (usually software) that provides the ability to take multiple storage systems and present those systems as a single, centrally-managed pool of storage. The problem with storage virtualization is that it does not solve the underlying challenges with managing the physical storage systems. Storage virtualization does nothing to alleviate the inflexible coupling between physical disks and logical volumes. Virtual storage abstracts the logical storage from the physical storage within the storage system itself, thereby simplifying the management and disk utilization efficiency of the storage system itself.

*“Virtualized storage solutions like iStor’s that allow administrators to abstract logical storage from physical storage will make it possible for organizations to realize the full potential of a virtualized IT environment.”*

— Brad Nisbet  
IDC

## Benefits of Virtual Storage –

### Ease of use:

All disks are managed as single pool of storage, which automates the manner in which logical volumes are spread over physical disks. This both eliminates the constraints due to physical drive characteristics and simplifies system configuration thus reducing the time to manage the storage resources. Virtual storage does not require that groups of disks be bound to pre-determined RAID types. Virtual volumes, which can span any or all drives within the storage array, are quickly and easily carved out of the storage pool.

**Simple capacity expansion:**

Adding disks to the storage pool increases the capacity available to any volume within the pool, regardless of RAID type. This capacity is immediately available ensuring the highest possible level of utilization of all disks. Volumes can be expanded in minutes to utilize the full capacity available in the pool. Traditional architectures require adding capacity to the predefined RAID groups individually. Any excess capacity available in one RAID group cannot be made available to another RAID group that may be running out of capacity. Virtual storage simplifies RAID level migration as well. This makes it possible to modify both the capacity and the RAID configuration of a storage volume “on the fly” while the volume remains online. There is no need to locate a new set of drives for the allocation of the new RAID group, as all of this is managed automatically within the storage pool.

**Maximizes performance for all applications:**

Virtual storage can accelerate data access by spreading the read/write operations across a greater number of disks. Supporting multiple RAID types in a traditional architecture requires that the disks be grouped and dedicated to a single RAID type only. This means fewer spindles are available for each RAID type, resulting in decreased performance. The alternative is to dedicate all drives in an array to one RAID type, resulting in non-optimal RAID types for environments supporting disparate applications. With virtual storage, each volume can use as many disks as required for maximum performance and still have a Quality of Service best suited for the application.

**Simplifies capacity planning:**

Administrators no longer need to manage the physical-to-logic mapping using ad hoc techniques. All capacity is available to all volumes. Managing a single pool is simpler and easier than managing multiple RAID groups, and disk capacity is used efficiently. As the unused capacity decreases, simply increase the size of the pool, regardless of individual volume requirements.

**Application aware storage:**

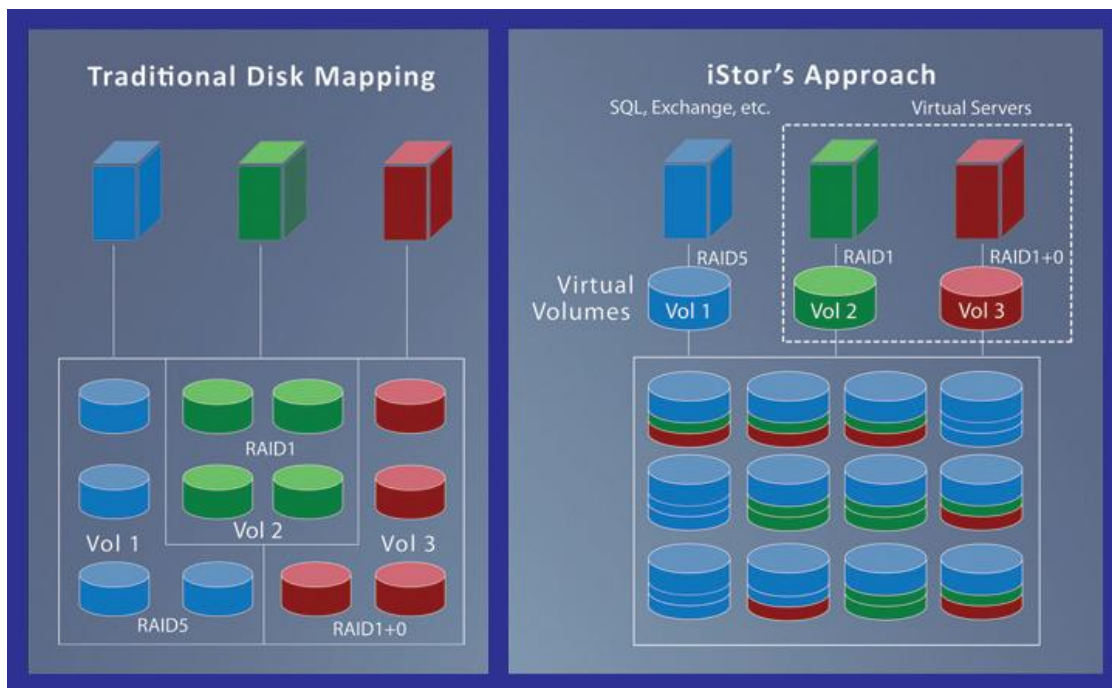
Virtual storage permits tuning Quality of Service [QOS] for each individual application by establishing the storage characteristics [RAID level, stripe depth, block size, etc.] on a volume-by-volume, not a disk-by-disk, basis. Since the choice of RAID for a specific volume is not constrained by predefined RAID groups, multiple RAID types can co-exist within the same array on the same physical drives. Choosing the right RAID for an application is as easy as choosing the application and volume size from a wizard-driven configuration menu.

**Accommodates mixed drives sizes:**

Virtual storage manages volumes at the level of *extents*, small contiguous segments on a disk drive, rather than at the drive level. One of the benefits of this approach is its ability to utilize the full capacity of all drives even in an environment of mixed drive sizes. In a traditional RAID storage system, the effective capacity of any drive is equal to the capacity of the smallest drive in the array.

## iStor Networks integraStor IP SAN Storage Systems

iStor Network's IP storage systems enable organizations to realize the full potential of their mixed workload environments while taking advantage of both server virtualization and Storage Area Networks (SANs). Our virtual storage technology optimizes the performance of each application while simplifying management, storage allocation and increasing capacity utilization.



Traditional storage architectures force a tightly coupled relationship between physical storage and logical volumes, creating an inflexible and difficult to manage environment. Conversely, iStor's Virtual Storage removes the constraints of physical storage, providing a flexible and easy to use solution, which is optimized for virtualized server and multi-application environments.

### The iStor Advantage

#### Ease of use:

Every storage vendor touts the simplicity and ease of use of their storage solution; iStor's integraStor® IP Storage systems deliver it. Sophisticated virtualization functionality enables an exceptionally easy-to-use graphical user interface. While many vendors claim to support virtual storage, most of these solutions support at most only a few of the features of the iStor Storage

arrays, and with limited functionality at best, or at price points beyond the reach of the small to medium business.

**Performance:**

iStor's 10GbE system architecture provides industry leading performance at entry level price points. The 8 x 1GbE host ports, four times the industry average, provide enough performance to satisfy the most demanding bandwidth intensive applications such as video and disk-to-disk backup. Transactional applications such e-mail or databases can take advantage of the greater than 80,000 IOPS delivered by the solution.

**Affordability:**

Management resources represent 70% of the long term costs of owning a storage solution. iStor's ease of use, coupled with aggressive price points, saves money spent on management resources as well as initial system acquisition costs. Over its lifetime, the utility of the iStor system can be extended in many ways: by adding additional disk drives (which can be higher capacity) in both the base system and in the expansion arrays; by offering cost effective expansion arrays, by utilizing the advanced functionality available in software upgrades, by adding high availability capability with a second modular controller, and by migrating from 1 GbE networking to 10 GbE networking with a simple controller upgrade. The incremental nature of these changes, in all cases, fully protects the original investment in the system.

iStor Networks provides affordable virtualization focused on the needs of the SMB. Why should the benefits of virtual storage be reserved only for the Enterprise?

To learn more about iStor Networks solutions, or to attend a webinar on Virtual Storage, please visit our website at [www.istor.com](http://www.istor.com)