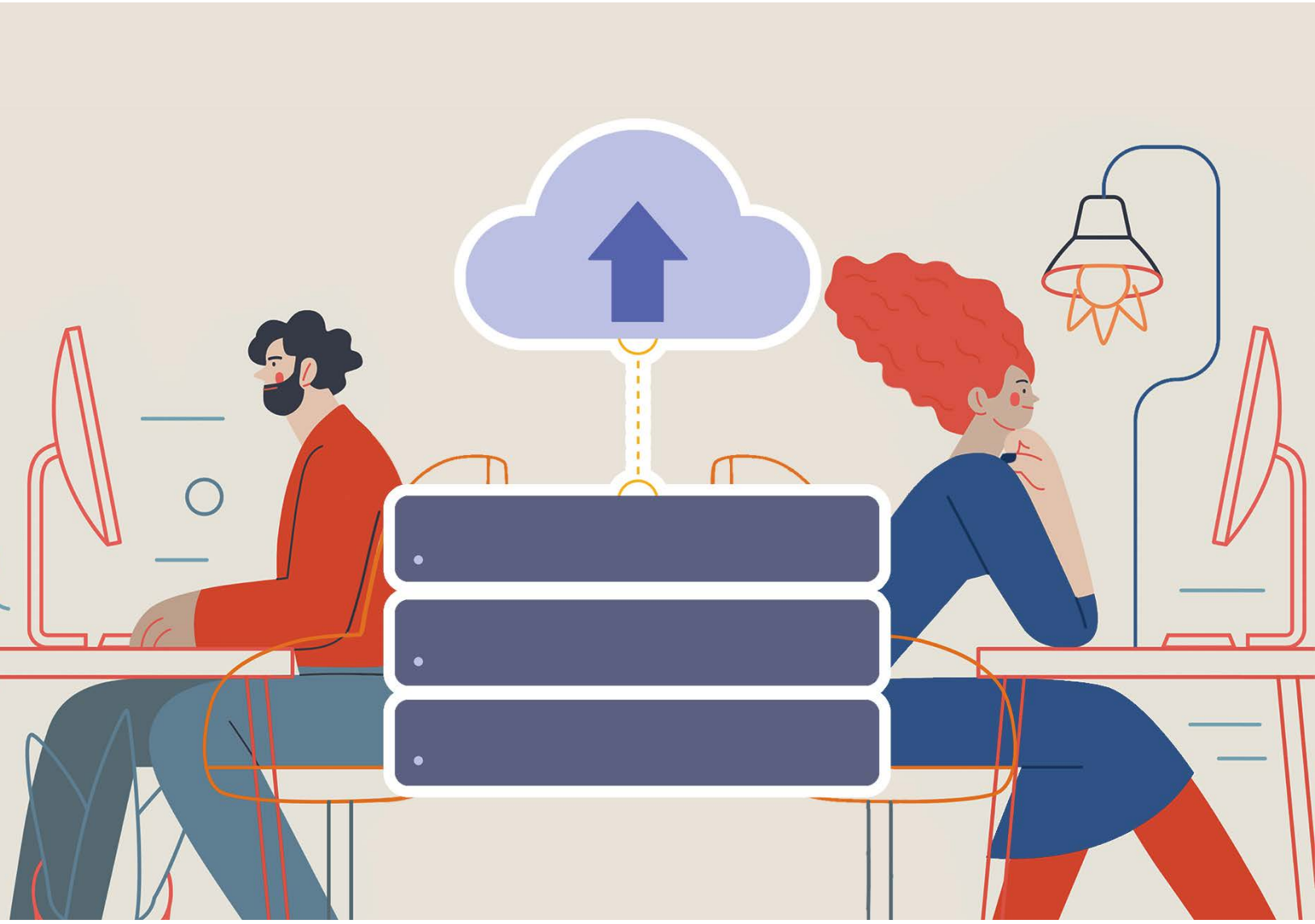
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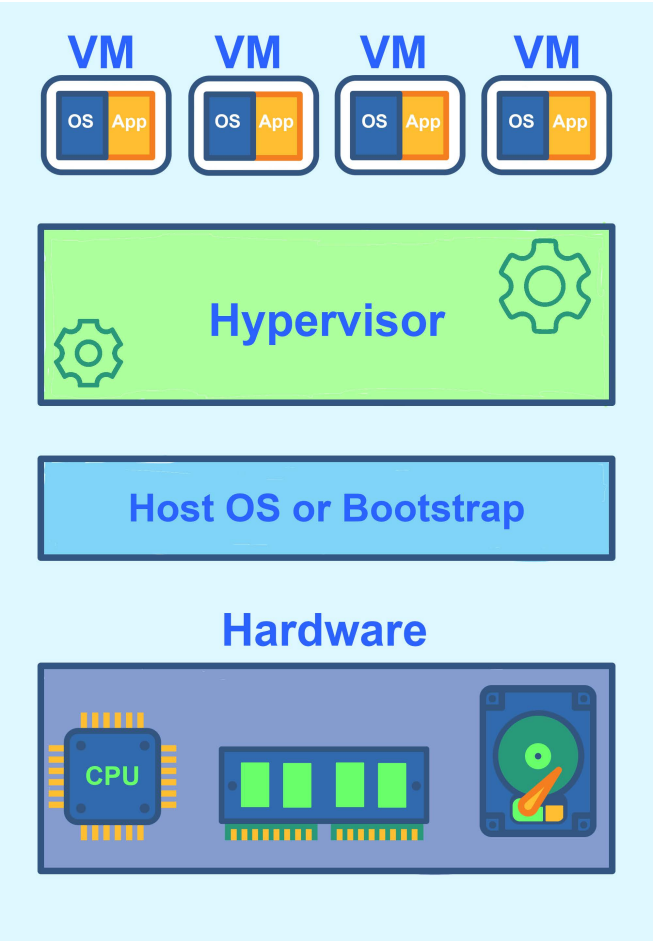
Storage Virtualization: Basic Applications and Benefits



STORAGE VIRTUALIZATION: CONCEPTS AND ENVIRONMENTS

Virtualization: A Basic Definition

Virtualization is an essential technology used by many organizations to optimized IT tasks. Virtual machines (VM) are functional servers with full operating systems that are encapsulated in a virtual space, with multiple VMs running on the same IT hardware, separated from the user with an abstraction layer.



In simple terms, virtualization can improve IT resource management efficiency and increase availability without raising costs.

Flexible, Efficient, and Secure Infrastructure

Virtualization can come in many flavors, such as application virtualization or network virtualization. This document will dicuss the benefits and value of storage virtualization.

The fundamental concept of storage virtualization is fairly simple. From the user's perspective, they simply request as much storage as they need for their application. It may actually be housed across several different physical units. But instead of connecting directly to a physical storage device, the user addresses a "virtual" storage facility.

Many organizations can not or will not store certain data entities inside a cloud service. Their concerns may regard security, regulatory compliance, company policy, or other considerations. For them, virtualized storage is the ideal solution, making the most of all physical investments while optimizing utilization across all users.

STORAGE VIRTUALIZATION: CONCEPTS AND ENVIRONMENTS

Maximizing the flexibility and adaptability of virtualized storage are the various methods available to customize the realization of your virtualized storage system. Storage Area Networks (SAN) and Network Attached Storage (NAS) systems are both popular platforms on which to build a virtualized storage solution.

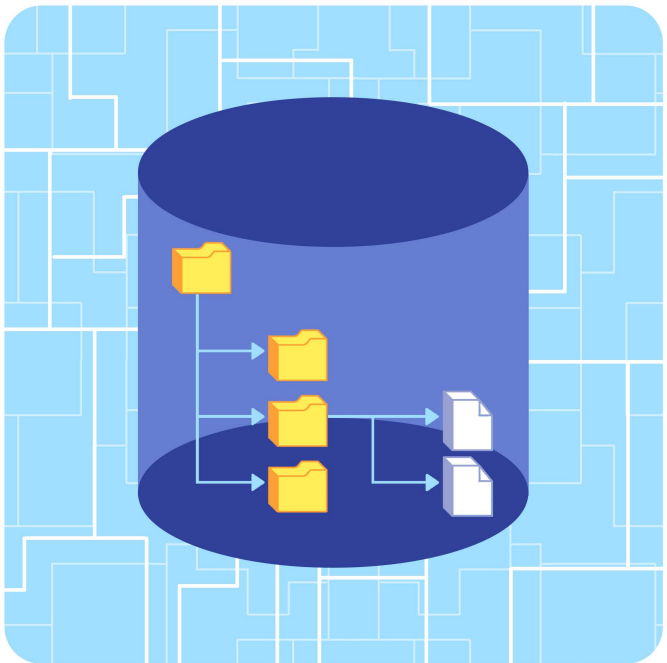
Storage virtualization can be seen as an abstraction layer that provides additional benefits. This includes the aggregation of multiple physical storage devices across various storage and interface protocols (such as iSCSI, or Fibre Channel) into a single virtual storage pool. The creation and provisioning of virtual storage volumes, which appear as locally-attached logical devices to their host server, can be performed from a single centralized console.

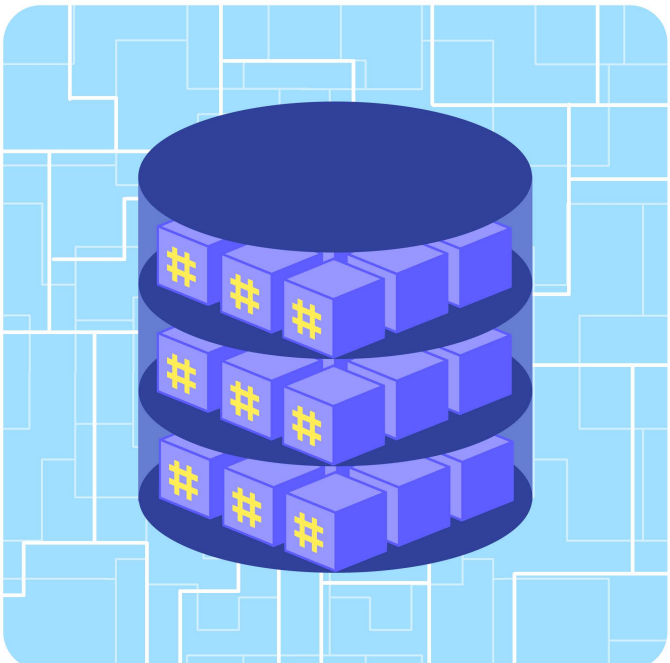
By itself, storage virtualization is a very effective way to cut costs and make provisioning resources for new and existing business purposes quick and easy. However, when offered in conjunction with cutting-edge storage management features such as snapshots, failover, replication, and data backup and recovery, storage virtualization can help accelerate these processes and optimize your IT.

STORAGE VIRTUALIZATION: CONCEPTS AND ENVIRONMENTS

File-based storage is applied to network-attached storage (NAS) systems. Using Server Message Block (SMB) with Windows servers or Network File System (NFS) protocols for Linux servers, file-based storage virtualization removes the dependence in a normal NAS array between the data being accessed and the location of physical memory. Pooling NAS resources makes file migrations easier in the background, which in turn improves storage performance. NAS systems are simple to manage, but storage virtualization makes it even easier to manage multiple NAS devices through a single console.

Block-based storage is used with storage resources accessed via Fiber Channel (FC) or Internet Small Computer System Interface (iSCSI) storage area network (SAN), which are more frequently virtualized than file-based storage systems. Block-based systems abstract logical storage, such as drive partitions from the physical memory blocks in a storage device, such as a hard disk drive (HDD) or solid-state drives. Operating similarly to the native drive software, there's less overhead for read/write processes, so block storage systems will perform better than file-based systems.





STORAGE VIRTUALIZATION BENEFITS: LOWERING COSTS AND IMPROVING EFFICIENCYVIRTUALIZED STORAGE

Reduce hardware and administrative overhead

Virtualized storage is inherently hardware-agnostic. This essentially creates plug-and-play storage hardware, without the complex and time-consuming setup configurations and testing.

When storage is virtualized, this reduces hardware costs and accompanying cost overheads such as physical space and power costs, lowering the Total Cost of Ownership (TCO) for the enterprise. In addition, there is less personnel required to manage the IT infrastructure.

Since users don't need to interact with the user interfaces of older systems, virtualized storage makes it easy to extend usage of older storage hardware. Simply include them in the resource pool, perhaps as a lower criticality tier for archives or less critical data.

Efficient allocation and scaling of storage resources

Since virtual volumes can be pooled from across multiple physical storage hardware, a virtualized storage enrivonment maximizes capacity utilization. While disk utilization with traditional storage technologies is typically only 30%-70%, disk utilization with storage virtualization can reach up to 90%.

IT admins can utilize virtualization to respond immediately to storage needs and allocate more capacity only as needed, providing high availability and also preventing under-or over-allocating resources.

This opens up the way for both current and future resource planning for server expansion. As such, virtualized storage is easily scaled up or down as needed, making it a highly cost-effective solution for managing data growth.

STORAGE VIRTUALIZATION BENEFITS: AVAILABILITY AND BUSINESS CONTINUITYZED STORAGE

High availability and improved data protection

Transitioning to storage virtualization enables businesses to incorporate cutting-edge software-defined technologies. Advanced storage features such as tiering, caching, and replication can be easily accomplished at the virtualization level, along with backup techniques such as snapshots.

With storage and backup volumes enabling more flexible operations, the storage infrastructure can be configured to have redundancy built-in across the data path to reduce possible points of failure. For example, to protect against server or hardware failure, IT admins can configure the solution to support remote backup or replication of virtual volumes to an off-site backup location to have an extra copy that is unaffected by natural disasters or ransomware.

Streamlined backups and robust business continuity

Virtualized storage can particularly aid the performance of backups. By encapsulating entire systems into single files that can be replicated and restored on any target server, you can streamline the recovery process.

Rather than needing to rebuild complex systems and painstakingly recovering vast volumes of data, all you would need to do is move the saved system image onto any existing hardware and overwrite the old one. This process can minimize downtime and drastically improve your Recovery Time Objective (RTO).

In an age when businesses simply cannot operate without timely access to their data or systems, having minimal downtime and robust disaster recovery plans is an essential step in ensuring your returns.

VIRTUALIZED STORAGE: CRITERIA AND CAVEATS

Storage virtualization has countless benefits in terms of efficiency, speed and storage TCO, but it can always have its downside. Once you've implemented storage virtualization across your data infrastructure, it can be difficult to roll your storage back to a pre-virtualized state and management errors, however small, can impact large quantities of storage. Once you understand the technology and how to deploy it most successfully, you can spread virtualization across your network to reap its full benefits.

With proper implementation, storage virtualization can yield tremendous cost savings and other vital benefits to today's enterprises. However, storage virtualization cannot be easily applied in a vacuum, as it ideally should be a part of a complete, open, high-performance storage infrastructure solution that also includes excellent data security, performance (data storage and access speed), ease of use, and streamlined integration of host-based systems.

While there is a bevy of virtualization solutions available, include wide variations in performance, data security, scalability, and setup costs, the real challenge in determining which hardware solution to integrate is figuring out your business-specific data needs. Factors such storage capacity, bandwidth, physical connection logistics, as well as available staff and other resources to manage the solution.

Conclusion

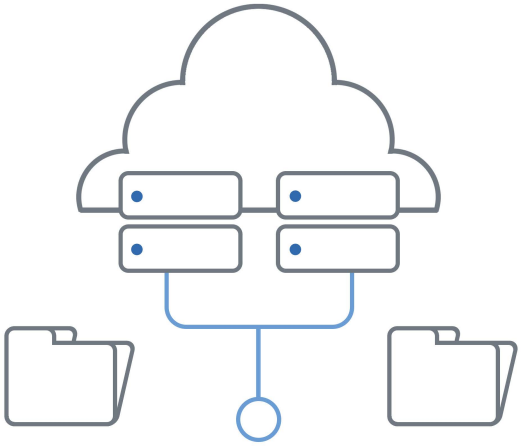
Virtualized storage makes as much capacity available as is needed at any time without any data residing outside your own data center. The technology that powers multi-tenant cloud server operations is available to those who feel the need to contain their data assets internally.

The guidance you need to help you begin to optimize the many benefits you derive from virtualized storage is available from Buffalo Americas, which has been developing and manufacturing superior NAS, SAN, and other storage technologies for decades.

Buffalo offers network-attached storage solutions that are reliable, scalable, and secure. Not only our NAS are easy to deploy and use, they can act as the ideal platform for storage virtualization to optimize your IT.

Contact us to start your storage virtualization journey:

1-800-688-7466
Web Form Submission



About Buffalo

Our network-attached storage (NAS) devices, many with scale-as-you-go options, are installed with pre-tested hard drives that eliminate the hassle of sourcing and testing drives, saving you time and money.

Buffalo's strong international industry alliances with companies such as Intel, Broadcom™, Microsoft, and others have allowed it to lead the industry in the development of the latest technologies into practical tools for small business.

Learn more at www.buffaloamericas.com.

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