PRODUCT DATASHEET

VMware vStorage Thin Provisioning

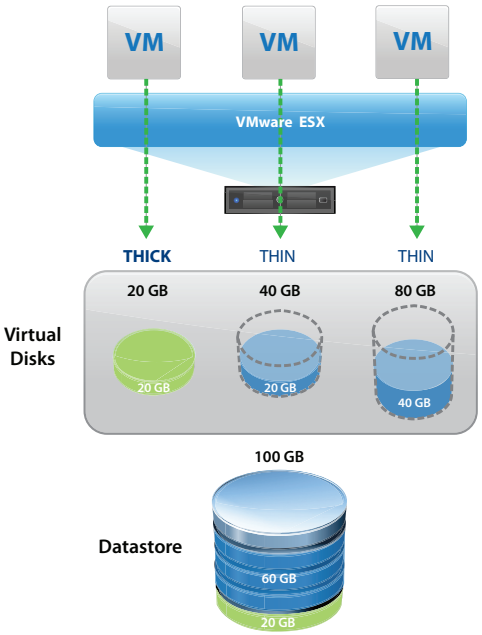
High Utilization with Rapid Provisioning for Virtual Machine Storage

AT A GLANCE

VMware® vStorage Thin Provisioning dramatically increases virtual machine storage utilization by enabling dynamic allocation and intelligent provisioning of physical storage capacity.

BENEFITS

- Increase storage utilization
- Enhanced application uptime
- Simplified management



Thin Provisioning dramatically increases virtual machine storage utilization

What is VMware vStorage Thin Provisioning?

VMware vStorage Thin Provisioning gives you higher utilization by letting you dedicate more storage capacity than the actual purchased capacity. Traditionally, application administrators estimated and requested capacity keeping future growth in prospective. This over-provisioning of capacity resulted in unused space, similar to the problem of RAM over-commitment in the server space.

With VMware vStorage Thin Provisioning operating at the virtual disk level, VI administrators gain the ability to allocate virtual disk files as "thick" or "thin". Thin provisioning of virtual disks allows virtual machines on VMware ESX™ hosts to provision the entire space required for the disk's current and future activities, but at first commits only as much storage space as the disk needs for its initial operation. It achieves this with zero performance impact, continuous service availability and complete data integrity. Thin Provisioning enables organizations to provision heterogeneous storage pools, increase utilization, and reduce administration costs.

How is VMware vStorage Thin Provisioning Used in the Enterprise?

Customers use VMware vStorage Thin Provisioning to:

- **Increase storage utilization.** Application users have always requested storage administrators to provision more capacity than needed in order to guarantee support for future growth. The maximum capacity is seldom reached and therefore results in unused space and waste resources. It also encroaches into the space that could have been used by other applications.

  With VMware vStorage Thin Provisioning, storage administrators can increase their storage utilization by letting them dedicate more storage than the actual capacity. By allowing oversubscription of capacity to the virtual machines, thin provisioning eliminates the need to dedicate full capacity upfront.

- **Enhance application uptime.** Managing storage allocations to support dynamic environments can be a time-consuming process that requires extensive coordination between application owners, virtual machine owners and storage administrators, often resulting in downtime for critical applications.

  Furthermore, delay during the process of storage allocation at any layer, storage to application can result in prolonged application downtime. By eliminating the need to periodically provision more capacity, VMware vStorage Thin Provisioning helps to eliminates application downtime.

KEY FEATURES

- **Simplify storage capacity management.** Typically, storage provisioning is a manual process requiring careful planning and coordination by IT management, storage administrators, system administrators, and application administrators.

  VMware vStorage Thin Provisioning lets application users proactively manage storage capacity in a way that is transparent to storage administrators. In addition, VMware vSphere™ Client provides a single management point to set alarms and alerts required to safely thin provision storage to virtual machines.

How Does VMware vStorage Thin Provisioning Work?

VMware vStorage Thin Provisioning allows administers to utilize available storage space by using advanced techniques such as over-allocation and over-commitment of storage. With this approach, virtual machines gain access to a large amount of storage than actual footprint. It is allocated and expanded on-demand by the VMFS 3 driver when the guest OS requests.

VMware vStorage Thin Provisioning operates at the virtual machine disk (VMDK) level. When a VMDK file is allocated it can be allocated as either "thick" or "thin". Thin means thin provisioned. For example, blocks in the VMDK file are not allocated and backed by physical storage until they are written during the normal course of business. Note that a read to an unallocated block will simply return zeroes, but not back the block with physical storage until it is written.

Thin provisioned VMDKs are created more quickly and optimize the space usage. Once all of the thin or sparse disk's blocks are allocated, they are no different from a thick disk.

Key Features of VMware vStorage Thin Provisioning

- Interoperability. The complete operating system and hardware independence allows vStorage Thin Provisioning to connect and provision any tier of storage independent of connectivity.
- Thick to thin migration. Leveraging VMware Storage VMotion™ one can convert an existing thick format to a thin format.
- Alarms and reporting. Thin Provisioning is integrated with VMware vCenter™ Server. Therefore, you can provide reports and set thresholds to proactively manage growth and capacity.
- Oversubscription protection. Thin provisioning can lead to oversubscription. Manage oversubscription by Storage VMotion (which enables dynamic migration of VMDKs) or VMFS volume grow (which provides the ability to dynamically increase the size of your datastore.)

Find Out More

Product Specifications and System Requirements

VMware vStorage Thin Provisioning is a capability of VMware ESX and requires VMware vCenter Server. For detailed support and information about compatibility and interoperability, please refer to the VMware vSphere™ compatibility guides and release notes, as well as the VMware vCenter Server Requirements document. For more information, visit the VMware vSphere Web page at http://www.vmware.com/go/vsphere.

For information or to purchase VMware products, call 1-877-4VMWARE (outside of North America dial +1-650-427-5000), visit www.vmware.com/products, or search online for an authorized reseller. For detailed product specifications and systems requirements, please refer to the VMware vSphere™ install and configure guide.

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