Solution Brief

Thin Provisioning

For the Intelligent Storage Element

Key benefits of Thin Provisioning

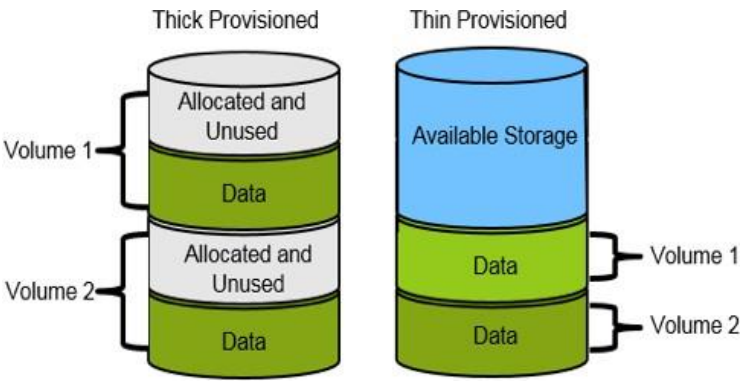
- Enables virtualization administrators the ability to deliver more VMs per ISE
- No impact to user experience
- Reduced solution costs, improved return on investment
- Still enables 100% performance at 100% capacity utilization

It is easiest to describe thin provisioning by comparing it to its counterpart "thick" or "fat" provisioning. Thick provisioning is the traditional method of allocating storage space up front beyond the current needs. As a result, storage administrators frequently find themselves with low utilization rates and a lot of unused and stranded capacity, a typical effect of poor storage efficiency.

Thin provisioning allows administrators to provision the amount of storage the business needs, without committing any unused capacity which can be used.

Benefits of Thin Provisioning

- No more stranded capacity for costly Tier 0 or Tier 1 storage
- Reduced capital cost due to higher efficiencies in storage utilization
- Provides an automated method for provisioning capacity only when it is needed, making is simple to use
- Because ISE provides 100% performance, even at 100% capacity utilization, thin provisioning provides X-IO customers the ability to support more high performance applications with greater operational simplicity and efficiency.



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Why is Thin Provisioning Important?

Unless you have money to burn, consider these statistics:

According to a study completed by Wikibon, 97% of customers experienced an increase in effective storage capacity as a result of virtualization and thin provisioning. Over 75% of customers achieved a 50% or greater increase in effective space (i.e., they would have had to install 1.5 times the storage capacity using traditional arrays to achieve the same allocated space).

ISE G3 Intelligent Storage Element

Common cases for Thin Provisioning

VDI and standard Virtual Machine environments. Whether it is a VDI desktop or standard virtual machine, whether it is a VMware, Citrix, Hyper-V or KVM installation, most virtual machines consume a fraction of the actual allocated disk space. In data center consolidation projects and physical to virtual migrations P2V migrations, this becomes especially important when considering the overall cost savings of the new solution.

Another common use case for thin provisioned solutions are user home directories. These can vary greatly in size, and having a standard thick provisioned size for all users in a large organization typically results in wasted space. Thin provisioning volumes for the home directories easily accommodates the "big" customer without wasting disk space on the larger percentage of the population that has modest disk space requirements.

GISD

"Unlike other storage solutions, X-IO Hybrid ISE maintains excellent performance levels even when it's being worked hard. We can maximize usage of the device, giving it excellent performance in our VDI environment."

Shannon Rico
Network Services Manager
Garland Independent School District

In some solutions the OS or Hypervisor allows administrators the ability to reclaim allocated, but no longer used storage capacity. An example of this capability is demonstrated with the VMware VAAI UNMAP command. This is VMware's method of reclaiming dead or stranded space from thinly provisioned VMFS volumes. UNMAP tells the array that thin provisioned blocks are no longer in use and may be reclaimed, this supports optimal utilization of the storage, but allows reclamation using hypervisor aware methods.

vmware READY
Windows Server 2012 Certified
CITRIX READY

To find out more about how Thin Provisioning can work for you visit:
http://xiostorage.com/products/ise-storage-systems

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