

Hitachi Dynamic Provisioning Software: Advanced Thin Provisioning

Hitachi Dynamic Provisioning software is a thin provisioning product that provides virtual storage capacity to simplify administration, eliminate application service interruptions and reduce cost when adding storage.

Tune Your Entire Storage System for Maximum Efficiency

Ongoing rapid growth of data storage requirements and escalating storage and storage management expenses increasingly challenge today's companies. Hitachi Dynamic Provisioning software eases these concerns by greatly simplifying the application storage provisioning process and saving IT money on storage purchases.

Dynamic Provisioning allows storage to be allocated to an application without it actually being physically mapped until it is used. This just-in-time method means storage allocations can exceed the amount of storage that is physically installed. It also decouples the provisioning of storage to an application from the physical addition of storage capacity to the storage system. Both capabilities significantly simplify the storage provisioning process.

As physical storage is nondisruptively added to the storage system, it is placed in a central pool that is available to all thin provisioned volumes. When an application requires additional capacity, the storage system automatically allocates the additional physical storage needed by the volume. Behind the scenes, Dynamic Provisioning

monitors storage resources and proactively sends alerts before more physical storage is required. Dynamic Provisioning simplifies performance optimization by transparently spreading many individual application data sets across many physical disks, reducing performance management concerns and optimizing performance and throughput.

With the use of Dynamic Provisioning, storage utilization rates improve and the entire storage system is tuned for maximum efficiency. In tiered storage environments where application quality of service requirements are matched to storage assets, Dynamic Provisioning offers a useful new tier option. And on Hitachi Virtual Storage Platform, Hitachi Universal Storage Platform® V and Hitachi Universal Storage Platform VM it can be used with both internal and externally attached heterogeneous storage.

Coupled with the advanced features and reliability of Hitachi storage systems, Dynamic Provisioning offers reduced capital and management expenses and an improved return on storage investment.

Benefits

Ease Storage Additions, Reduce Cost and Complexity

- Application storage provisioning is much simpler, faster and less demanding on your administrator than traditional provisioning. Your administrator can draw from the Dynamic Provisioning pool without immediately adding physical disks.
- When more physical storage is needed, your administrator can simply and nondisruptively install additional physical disks by adding them into the Dynamic Provisioning disk pool. Dynamic Provisioning then automatically rebalances and optimizes the pool. This decoupling of physical resource provisioning from application provisioning simplifies storage management, reduces application outages, saves time and keeps costs down.

Reduce Application Outages When Provisioning

- Since virtual volumes of maximum anticipated capacity can be defined in the

beginning, the volume capacity does not have to be increased and the application and system configurations do not have to be changed as often, improving application availability.

Simplify Storage Performance Optimization

- Effectively combining application I/O patterns and spreading I/O activity across available physical resources eliminates challenges of manually spreading an application over many spindles and predicting I/O patterns that will cause contention and performance bottlenecks.
- Dynamic Provisioning optimizes aggregate throughput and generally delivers the best performance — automatically.

Reduce Storage Acquisition Costs, Minimize Overprovisioning

- A volume larger than the physical disk can be defined. This allows all anticipated storage to be configured initially, while only the required physical disk capacity is purchased. Increases are incremental, on a just-in-time basis, which keeps costs down.
- Unused storage can be reclaimed, further deferring future purchase. First, Dynamic Provisioning supports “zero page reclaim,” which can reclaim unused space from previously allocated storage, both internal and externally connected. Second, it supports ongoing storage reclamation using SCSI standardized commands currently implemented by major vendors, such as VMware and Symantec.
- The reduction in physical disk requirements also provides savings in space, power and cooling requirements.

Compatible Replication Capabilities

- Dynamic Provisioning is compatible with all replication products on Virtual Storage Platform, Universal Storage Platform V and Universal Storage Platform VM, as well as Hitachi ShadowImage® Replication software on Hitachi

HITACHI DYNAMIC PROVISIONING SOFTWARE FEATURE HIGHLIGHTS

	Hitachi Unified Storage (HUS) 100 Family and Hitachi Adaptable Modular Storage (AMS) 2000 Family	Hitachi Virtual Storage Platform (VSP), Hitachi Universal Storage Platform® V (USP V) and Universal Storage Platform VM (USP VM)
RAID Levels Supported	All RAID levels supported by platform	All RAID levels supported by platform
Disk Types Supported	All disk types supported by platform	All disk types supported by platform
Max. Virtual Volume Capacity	32MB to 60TB	46MB to 4TB
Max. Number of Thin Provisioned Volumes	Around 21K	Around 64K
Max. Pool Capacity	Same as total storage system	Max. total pools capacity – 1.1PB (USP V) and 5PB (VSP)
Number of Pools per Storage System	1 to 64	1 to 1024
Pool Usage Threshold Settings	2 utilization-level thresholds and 2 “subscription” thresholds	2 configurable pool utilization thresholds, overprovisioning control (USP V) and configurable subscription threshold (VSP)
Dynamic Virtual Volume Expansion	Supported	Supported
Zero Page Reclaim and “Write Same”	Supported	Supported
Automatic Pool Rebalance after Expansion	Supported	Supported
Alerts	Blinking light, SIM, email and SNMP traps	SIM, email and SNMP traps

Adaptable Modular Storage 2000 and Hitachi Unified Storage 100 family systems.

- Cost benefits are further enhanced in replication environments where savings from thin provisioning are multiplied.

Savings are gained in replication space, in bandwidth, since only occupied portions of volumes are replicated, and in replication license fees, which only apply to the occupied space.



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