

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.

Improve Storage Usage Rates, Tune for Maximum Efficiency

For companies faced with ongoing rapid growth of their data storage requirements and escalating storage and storage management expenses, Hitachi Dynamic Provisioning software greatly simplifies the application storage provisioning process and saves money on storage purchases.

Dynamic Provisioning software 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 software monitors storage resources and proactively sends alerts before more physical storage is required. Dynamic Provisioning software 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 software, 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, low cost tier option. And on the 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 software 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 the administrator than traditional provisioning. The administrator can draw from the Dynamic Provisioning pool without immediately adding physical disks.
- When needed, more physical storage disk can be added into the Dynamic Provisioning disk pool, simply and nondisruptively. 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 software optimizes aggregate throughput to deliver the best performance — automatically.

Reduce Storage Acquisition Costs, Minimize Overprovisioning

- A volume larger than the physical disk can be defined; anticipated storage can be configured initially, while only 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 enables ongoing storage reclamation with file systems supporting Symantec’s modified semantics for the SCSI “Write Same” command.
- The reduction in physical disk requirements also provides savings in space, power and cooling requirements.

Compatible Replication Capabilities

- Dynamic Provisioning software is compatible with all replication products on the Universal Storage Platform V and Universal Storage Platform VM, as well as Hitachi ShadowImage® Replication software on the Hitachi Adaptable Modular Storage 2000 family systems.
- Cost benefits are further enhanced in replication environments where savings from thin provisioning are multiplied.

HITACHI DYNAMIC PROVISIONING SOFTWARE FEATURE HIGHLIGHTS

	Hitachi Adaptable Modular Storage 2000 Family	Hitachi Universal Storage Platform® V and Universal Storage Platform 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	Adaptable Modular Storage 2100: 2048 less Dynamic Provisioning pool groups Adaptable Modular Storage 2300, 2500: 4096 less Dynamic Provisioning pool groups	Around 64K
Max. Pool Capacity	Same as total storage system	Max. capacity per pool – 1.1PB Max. total pools capacity – 1.1PB
Number of Pools per Storage System	1 to 64	1 to 1024
Pool Usage Threshold Settings	2 utilization-level thresholds and 2 “overprovision” thresholds	2 pool utilization threshold settings: one is at 80 percent and one is user definable
Dynamic Virtual Volume Expansion	Supported	Supported
“Zero Page Reclaim” and “Write Same” Support	Supported	Supported
Automatic Pool Rebalance after Expansion	Supported	Supported
Alerts	Blinking light, SIM, email and SNMP traps	SIM, email and SNMP traps

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

System Requirements/Support

<http://www.hds.com/go/storage-command-suite-requirements>

Storage Management Solutions

Hitachi Data Systems storage management solutions consist of hardware, software and services that apply best practice planning

and configuration with expert onsite installation support. Hands-on training is also available and recommended for all products, on your site or at Hitachi Data Systems training centers. Software solutions that complement Dynamic Provisioning include:

- Hitachi Device Manager
- Hitachi Basic Operating System V
- Hitachi Tuning Manager
- Hitachi Tiered Storage Manager
- Hitachi In-System Replication software bundle
- Hitachi Universal Replicator

Hitachi Data Systems Corporation

Corporate Headquarters

750 Central Expressway
Santa Clara, California 95050-2627 USA
www.hds.com

Regional Contact Information

Americas: +1 408 970 1000 or info@hds.com
Europe, Middle East and Africa: +44 (0) 1753 618000 or info.emea@hds.com
Asia Pacific: +852 3189 7900 or hds.marketing.apac@hds.com

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