

Do More for Less with the Adaptable Modular Storage 2000 Family

WebTech Q&A Session – February 23, 2011

- 1. Are there any best-practice tuning parameters on Hitachi Adaptable Modular Storage (AMS) for virtualizing the AMS behind Hitachi Universal Storage Platform V (USP V) or Virtual Storage Platform (VSP)?**

There is a library of best practices guides posted on the Solutions tabs of the USP V and VSP product pages on hds.com. Here is a link to the VMware guide: <http://www.hds.com/assets/pdf/optimizing-the-hitachi-universal-storage-platform-family-in-vmware-environments.pdf>. AMS virtualization starts on page 16.

- 2. Since AMS 2000 family can do dynamic load balancing at the controllers, when I provision a LUN do I need to provision to all controller ports to provide multiple path? Or is it not necessary to do?**

When a new LUN is provisioned for an application, you simply map the LUN to the same host ports that the application server is using to access the AMS 2000 system.

- 3. Is the Cache Residency Manager Software available on the AMS?**

Yes, this software is included with every system.

- 4. If I virtualize an AMS 2000 array behind a USP VM or USP V, does Hitachi Command Suite (HCS) support Hitachi Dynamic Provisioning (HDP) management through the GUI or CLI? In particular, if a virtual LUN needs to be expanded, can it be expanded through HCS or CLI if the domain controller is an USP VM or USP V?**

HDP can be used to create a pool of storage that includes an AMS 2000 system that is externally attached and virtualized behind a USP V, USP VM or VSP system. Either the GUI or CLI of HCS can be used to manage the storage. The management capability includes expanding a virtual LUN.

- 5. Can you do dedupe on an AMS 2000 family system?**

Dedupe can be done with Hitachi Data Protection Suite (HDPS) which is a supported option for the AMS 2000 family.

- 6. Does AMS support iSCSI?**

Yes, all AMS 2000 systems have an option for iSCSI host ports.

- 7. Is Hitachi Data Protection Suite (HDPS) only supported on AMS? How about other systems like VSP and USP VM? Is there any whitepaper that talks about HDPS?**

HDPS is an available option for the AMS 2000, USP V, USP VM and VSP systems. Here are links to two HDPS whitepapers:

- Hitachi Data Protection Suite and AMS 2000 Family Implementation Guide: <http://www.hds.com/assets/pdf/hitachi-data-protection-suite-and-ams-2000-family-implementation-guide.pdf>
- Hitachi Data Protection Suite and VSS Hardware Configuration Guide: <http://www.hds.com/assets/pdf/hitachi-data-protection-suite-and-vss-hardware-configuration-guide.pdf>.

8. Tell me more about the cost of acquisition versus total cost of ownership? How does this typically breakdown

The cost of acquisition, or the purchase of hardware equipment of infrastructure, typically represents only 20 to 25% of the total cost of ownership (TCO). This is an important distinction to make when considering storage solutions. The remaining bulk of costs can be categorized as mostly operational and other CAPEX expenditures associated with that purchase. They include the cost of waste, the cost of growth, and the sum of floor space expenses, power and cooling usage, costs to migrate, backup and recover data, and a variety of other direct and indirect expenditures. In fact, Storage Economics has characterized 33 different types of costs that are used to help customers calculate TCO. These cost categories are helpful in assessing the impact of a proposed storage purchase. If all elements in the Storage Economics equation are not taken into account, the real cost of a purchasing decision can be decidedly different than intended.

9. Does Dynamic Provisioning function the same way as Information Life Cycle Management? Or are there some better features?

Dynamic Provisioning is a component of ILM. Dynamic Provisioning allows administrators to maximize the value of their storage media by significantly improving the utilization rate within the storage environment. Whereas traditional provisioning allocates a defined amount of storage capacity to an application, and effectively restricts access to that capacity whether or not its consumed, Dynamic Provisioning provides a “pool” of storage which allows for applications to consume as much or as little storage as necessary – in a “just in time” format.

10. Your slide on performance is impressive, depicting a linear performance curve without degradation to extremely high IOPs and large configurations. Is this really unique? That is, where do we see other technologies begin to drop off in terms of IOPS, Drives, or both? Can you expound a bit on that?


The AMS 2000 family is really unique amongst modular storage products due to the number of backend links between the controller and the disk trays. The AMS 2500 has 32 SAS links on the backend and the 2300 and 2100 systems have 16 links. Most competitive models have either 4 or 8 links. As a result, other modular systems will hit a performance peak when 50% of the maximum allowable drives have been installed.

11. You talked up manual command spin up and spin down technology on the drives. Is this manual or automatic, and how would I invoke it?

Spin up and spin down is performed on RAID groups since it would not be practical to spin down only some of the drives in a RAID group while others stay operating. These drives can be spun down manually or automatically. Manual spin down is usually done for drives that have been installed but have not yet been allocated to LUNs. Automatic spin down is typically done in concert with backup windows. Drives that store backup data can be spun up prior to the start of the backup window and then spun down after the back writes have completed.

12. How are online microcode updates done without interrupting operations?

With the symmetric active-active design of the AMS 2000 family, the host ports stay active and can service I/Os through any host port during a microcode update. For example, a microcode update can be performed on controller-0 while its host ports will pass any I/Os received to controller-1 during the



update. As a result, the path does not need to be remapped during microcode updates and the operations are not interrupted.