

# Five Ways to Drive Efficiencies and Get More from Your Investment

## WebTech Q&A Session, October 27, 2010

### 1. Tell me more about the cost of acquisition versus total cost of ownership? How does this typically break down?

The cost of acquisition, or the purchase of infrastructure hardware and equipment, typically represents only 20 to 25 percent of the total cost of ownership (TCO). This is an important distinction to make when considering storage solutions. The remaining bulk of the cost, which can be categorized as mostly operational and other CAPEX expenditures associated with that purchase, include the cost of waste, the cost of growth and items such as the sum of floorspace expenses, power and cooling usage, costs to migrate, backup and recovery of data, and a variety of other direct or indirect expenditures. In fact, Storage Economics has characterized 33 different types of costs that are used to aid customers in calculating the 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.

### 2. What is contributing to the increased cost of managing data?

The cost of managing data is increasing year over year for two simple reasons:

#### a. Data, of all types, is growing significantly year over year.

As a result, administrators are constantly purchasing new storage, moving data from one system to another and relying on management software to manage it all. Unfortunately, the costs of managing data reach far beyond the data itself. Costs of managing data also include new personnel costs for administration (provisioning, migration, and so forth), datacenter costs (power, cooling, floor-space), backup and recovery, software and hardware maintenance.

#### b. There are inefficiencies associated with older technologies.

As noted in the presentation, inefficiencies within older storage technologies represent a significant cost to the administrator. Typically, storage utilization (capacity actually used versus total capacity) is on the low end, sometimes less than 40 percent. This means that while data grows and administrators buy capacity to store that data, inefficiencies also grow. This is partly due to management and provisioning processes, and partly due to architectures. For example, if you needed 1TB of data for a new application, and you maintaining a 40 percent utilization rate, you would need to buy 2.5TB to satisfy your requirements. In addition, storage systems do not always communicate efficiently. Disparate “islands of storage” can represent the highest level of inefficiency possible – essentially having the storage available, but not being able to access it. These pains are compounded by the fact that many data centers require several software vendors to administer the storage environment – each requiring separate training, licensing, and maintenance.

**3. Your slide on server growth hits home. Can you explain Hitachi Data Systems position on managing a growing server environment?**

As servers grow in both physical and virtual numbers, attaching the right storage architecture becomes all the more important. Historically, physical servers had to grow as a result of growing applications' need for more storage, and limited bandwidth per server. In fact, the storage became a bottleneck for performance. With the introduction of Hitachi Virtual Storage Platform, Hitachi also introduced the first 3D scaling platform which allows for efficient scaling within the server environment. Specifically, our "Scale Up" architecture allows more performance resources to be allocated per physical server, thereby enabling consolidation of physical servers, and growth of virtual servers. Also, "Scale Out" can provide the additional capacity required for application growth, without the additional administration or overhead. Finally, the Virtual Storage Platform "Scale Deep" architecture and its extensive integration with various server platforms, provides the ability to better utilize existing storage resources. In some cases, existing resources may not have a tight integration with the server environment. By virtualizing existing storage systems behind Virtual Storage Platform, these existing systems inherit all of the integration capabilities of Virtual Storage Platform.

**4. You mentioned page-based or volume-based tiering. Tell me more.**

Volume-based tiering is technology that allows the nondisruptive data movement of storage volumes between different types of storage media in an effort to reduce the average cost of storage tiers. For example, moving inactive data from expensive, high performance storage media to a low cost archive effectively lowers the cost of storage per GB or TB. Page-based tiering takes this technology a step further in two ways. 1) More granular – page-based tiering allows for data movement and tiering at the page level, allowing applications to be finely tuned and achieve a high level of capacity utilization 2) Introduction of SSD storage media – high performance storage media allows the portions of data that have significant performance requirements to use the most appropriate storage media.

**5. One of your slides mentions "sustainability." Can you address that?**

Yes, Hitachi Data Systems solutions have always focused on producing "sustainable" or "green" solutions. This includes industry-leading hardware that lowers power, cooling and floorspace requirements. This leads to an environmentally friendly product that is also economically efficient from an operational perspective. Doing more with less, in the same or smaller space, reduces operational costs and slows data center growth requirements.

**6. How can we integrate with other third party storage solutions?**

Hitachi Virtual Storage Platform incorporates extensive integration technologies. Virtualization, the key enabler, allows third party storage systems to be fully utilized by all application servers attached to the primary storage. This eliminates data silos and improves system and application performance. In addition, storage administration is conducted from a single interface which eliminates the need for multiple vendor management software in heterogeneous environments.

**7. Does Dynamic Provisioning function the same way as information Lifecycle management? Or are there some better features?**

Information lifecycle management (ILM) is a high level storage methodology focused on maximizing the value of both the data and the storage media by storing data on the right storage media at the right time. Performance data is stored on high performance media and slowly "demoted" to lower, less expensive, storage media over time. The idea is that not all data is created equal, and while data continues to grow exponentially, the management of data needs to incorporate policy-based data movement for efficiency.

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.

**8. Can we change the tier of the application during application usage?**

Yes, one of the benefits of Hitachi Tiered Storage Manager is the nondisruptive movement of data. Tiering data during application usage requires no downtime, no business disruption, and is completely transparent to the end user.

**9. What product or solution does Hitachi Data Systems provide for a common, or simplified management of storage (single-pane of glass management)?**

Hitachi Command Suite is our premier Storage Resource Management product. Hitachi Command Suite is a streamlined and integrated software suite for efficient management of virtualized storage and server infrastructures that lowers capital and operational costs. With new levels of usability, workflow, performance, scalability and private cloud enablement, Hitachi Command Suite lets IT organizations build sustainable infrastructures with leading storage technologies. It helps you flexibly align to changing business requirements and maximize return on IT investments.

**10. Does Hitachi Data Systems have a solution that will monitor performance from the actual application or process all the way down to storage? Can it point to where the issue may lie, whether application, storage or fabric?**

Yes, Hitachi Command Suite includes Hitachi Tuning Manager. That software is a path-aware storage resource management application that maps, monitors and analyzes storage network resources from the application to the storage device. It provides the end-to-end visibility required to isolate and diagnose performance bottlenecks with a focus on business applications, such as:

- Oracle®
- Microsoft SQL Server
- Microsoft® Exchange
- IBM® DB2®

Tuning Manager software offers historical trending and predictive analysis to properly forecast future storage requirements to meet required service levels. The alert facility in Tuning Manager provides for proactive monitoring and allows correction of potential problems before they can adversely affect application performance.