Hitachi's SMS: Enterprise Functions Meet Consumer Simplicity

Quick Note

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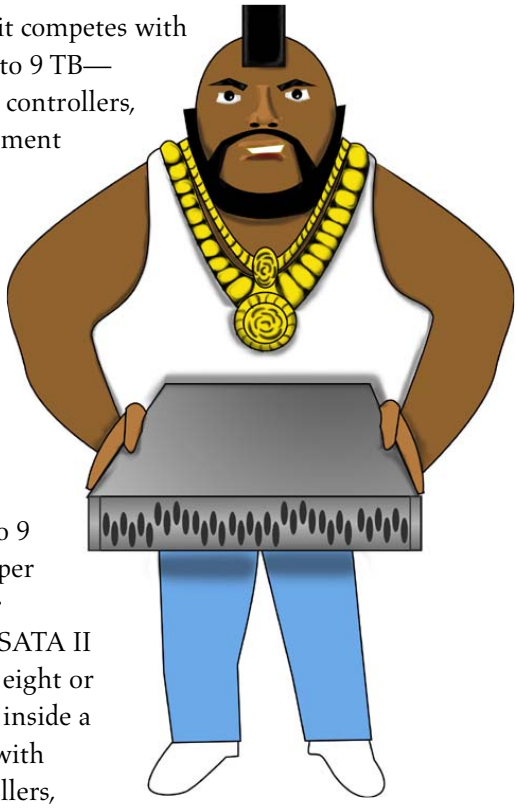
HDS, known for data-center class storage systems sold to large enterprises, is charting new territory with its new Simple Modular Storage (SMS) model 100, which is aimed at the mass market of small to medium-sized businesses and remote office users. SMS's design fuses enterprise-class data storage software and hardware with the ease-of-use of consumer electronics such as plasma TVs and DVD players. In building its SMS, Hitachi draws upon its experience in both fields.



What's different about this device from others it competes with is that it's a complete storage platform scalable to 9 TB—including RAID, active/active symmetrical disk controllers, data copy and migration functions, and management software—all packaged in a thin form-factor, resilient, easily transportable and maintainable unit. Hitachi is aiming for a "low touch" ownership experience. Key storage functions are aggregated within a pre-configured system, and are designed to operate as simply as a consumer electronics product.

The Basics

HDS's first SMS model will support from 0.5 to 9 TB of fixed disk capacity, with two iSCSI ports per controller (for a total of four on dual-controller configurations). Supported drive types include SATA II (500 or 750 GB) and SAS (147 or 300 GB). Six, eight or twelve drives in a RAID 6 configuration can fit inside a single 2U-high, 19" rack mountable enclosure with enough room left over for single or dual controllers, redundant power supplies, and two unique repair slots (more on these later). However, the mounting rack is not required. The SMS can be alternatively mounted on an office shelf or desktop. Dual power supplies can run off standard 110 and 220V electrical service, making it suitable for small business offices.

A standard SMS configuration with a three-year warranty can be acquired for about $5,000. This configuration includes:

- 1 iSCSI controller (2 ports),
- 1 GB of cache with 24-hour battery backup,
- 3 TB of raw storage(six 500 GB SATA II 7200 RPM HDDs),

- dual power supplies/fans,
- storage management software (Storage Navigator Modular 2, Copy-on-Write, LUN manager, SNMP agent, Password Protection, Performance Monitor, Authentication, Auto Migration, Data Shredding, Audit logging).

The SMS will support all major OS environments including:

- Microsoft Windows 2003, XP, and Vista. It also supports Microsoft Volume Shadow Copy Services (VSS), Virtual Disk Services (VDS), MPIO, Windows Native Backup, and is included in the Microsoft "Simple SAN" program.
- Unix (Sun Solaris 10, HP-UX 11i, and IBM AIX 5.3),
- Linux (Red Hat Enterprise Linux 4 & 5 and SuSE 10 Linux),
- Novell NetWare 6.5,
- VMware.

Operational and data management software is included that gives IT administrators (as well as HDS' network of over 1,500 channel partners) the ability to:

- install the device in a direct attached or iSCSI SAN configuration,
- attach additional application servers,
- configure and add LUNs,
- update microcode,
- make data copies, and perform other management and maintenance functions.

SMS will be offered initially as an iSCSI disk array, but it can and will be given other "personalities." Here, Hitachi departs from other vendors of mass-market SMB-grade external storage devices which try to put all of the personalities—NAS, SAN, data protection, archival storage, etc.—in one box. Hitachi's approach will be to offer different SMS personalities as time goes on—ones that would appeal to SMBs, consumers, or both groups. More on that point later.

Unlike Hitachi's other arrays, the Simple Modular Storage system is not designed to be scaled by adding more SMS modules. If a customer outgrows SMS' capacity limit—currently 9 TB—a new platform will be required. Therefore, it is suitable for smaller server consolidation applications using server virtualization (whether VMware, Virtual Server XenSource, or Virtual Iron) and in situations where server-based direct attached storage should be consolidated to sharable storage and therefore more easily managed. It can also be sold in the emerging consumer market for storage devices that support in-home media and high-end entertainment centers.

As mentioned, Hitachi has designed this device to be "low touch" in terms of maintenance and support. The standard three-year warranty can be extended for up to five years. Warranty support can include onsite service and parts replacement. "Phone home" capability is available at additional cost, though many SMBs may find this level of maintenance assurance unnecessary. The device will notify an administrator of a failed drive that can be replaced by HDS within two business days by the administrator without taking the SMS out of the rack or out of service. If the unit itself needs to be replaced under warranty because of failure of a component other than a disk drive, HDS with send a replacement unit which can be loaded by plugging cables between the old and the new replacement unit.[1]

TBs Where Datacenter Storage Can't Go

Physically speaking, the SMS is designed for "life in the field"—i.e. it goes into many of the places and environments that enterprise storage shouldn't and wouldn't normally go. HDS claims that the SMS units will run for up to five years without requiring repair. It is also designed to be easily and non-disruptively serviced by either the customer or an SMS reseller.

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[1] If a single-controller version of SMS experiences a controller failure, the replacement unit must be loaded from a backup copy of the data.

Plug and Play Drive Replacement – In case of a drive failure, SMS' RAID 6 implementation will support single or two-drive failures without data loss. It automatically notifies the customer of the failure and optionally "phones home" a service requirement; a new drive is shipped to the customer for installation. Removal of the SMS chassis from wherever it's installed is not required to replace the failed drive, nor is the customer required to open up the chassis itself.

Each unit comes with two unique disk drive repair slots located on the rear of the chassis. To replace a failed drive, at an appropriate time one simply plugs a new drive into either of the repair slots. SMS software then automatically rebuilds the RAID group and places the new drive into operation. The failed drive remains within the SMS chassis. This makes drive replacement essentially "goof proof." Users cannot mistakenly replace the wrong drive or insert it into the wrong slot.

Box-to-Box Chassis Replacement – If chassis replacement becomes necessary (say because of a power supply, controller, or fan failure) under the initial or extended warranty period, a new or refurbished unit is sent to the customer or reseller. Cables are installed between the old and new units, and data is copied from one to the other while the old unit is still in service. The replacement unit can then be placed into service once all data is copied.

The customer can then return the old unit directly to HDS or via the reseller. When this happens, the drives on the returned unit are overwritten by random characters to prevent unauthorized reading or copying of the data.

Warranty Service by Channel Partners – Customers who require onsite warranty service can select either HDS or third-party services. Qualified SMS channel partners will be able to sell SMS units and offer onsite warranty support. Under this program, channel partners will take full responsibility for warranty coverage, including notification of warranty trigger events by the customer, delivery of replacements to the customer, and acceptance of returns under warranty from the customer.

Therefore, the channel partner will need to keep a "buffer stock" of spare units and drives supplied by HDS. The channel partner will also assume responsibility for tracking units and parts. Once service is complete at the customer end, the channel partner replenishes stock by swapping defective disks or units with HDS.

The bottom line here is simply this: by making third-party support and maintenance a simple business proposition by channel partners, Hitachi expands SMS' serviceability and therefore the deploy-ability.

Where Does SMS Go Next?

The Simple Modular Storage system is Hitachi's first strategic foray into the storage market for SMBs and distributed enterprises. There are a number of directions Hitachi could go simultaneously with SMS.

For example, we believe Hitachi may introduce a NEBS-compliant version sometime later next year. This version would make SMS suitable for mobile applications like military duty, scientific data collection, and mobile healthcare units. Mobility combined with remote data transfer software would allow customers to deploy the SMS quickly for these applications and copy data back to a centralized, secure location on a daily or hourly basis, as needed.

The SMS could also be given a NAS personality, for example, by adding Microsoft's Windows Storage Server (WSS) running as SMS' operating system.

Upon first release, SMS will have an Ethernet front-end for I/O operations. However, with a Fibre Channel front-end, it could participate in the numerous "Simple SAN" initiatives now offered by vendors like Brocade, which offers FC SAN switches, HBAs, and software bundles for easy SAN setup and management by SMBs.

Finally, the SMS could be supported as modular storage behind a more centralized storage array such as the HDS USP V virtualized storage controller. That would facilitate using the SMS as a

mobile data collection and distribution device by larger enterprises and research organizations.

Conclusion

Hitachi's Simple Modular Storage system today is terabytes of iSCSI storage wrapped in a pizza-box sized enclosure, designed to be "consumer electronics easy." As we've outlined, this is just the opening gambit. We see growing demand for big data storage in small spaces out on the "edge" of enterprise networks. These types of applications include real-time surveillance systems by retailers for both security and customer profiling; and mobile emergency room, intensive care, and other types of healthcare delivery units powered by mobile systems and managed by regional healthcare providers. And yes, let's not forget the emerging demands of the well-heeled couch potato. In the future, the Hitachi SMS could play in all of these environments.

SMB-grade storage is a relatively new market territory for HDS. Since there are a number of competitors here already, HDS has to bring some differentiators to succeed. To its credit, Hitachi recognizes that these devices will likely wind up in environments that are far less than data-center perfect, so SMS is built to go into the field and provide dependable service for at least five years. The "low-touch" aspect of the SMS will attract IT administrators, channel partners, and distributors who want to deploy modular storage as needed, where needed, with minimum support required by field-based personnel who probably don't know how to care for terabytes of storage sitting on a shelf and plugged into a wall socket.