



## Sun's Latest Releases Feature Tiered Storage

Analyst: Michael Fisch

### Management Summary

Marching in step with its quarterly announcement schedule, Sun recently introduced a refreshed *Sun StorEdge 6000* family, an e-mail archiving solution called the *Sun Infrastructure Solution for Infinite Mailbox*, and the *N1 Data Platform*. While these are different storage products serving different purposes, there is a common thread running through them. **They all embrace the up-and-coming trend of tiered storage classes**, where a storage infrastructure is sub-divided into different price/performance tiers. Administrators can then more precisely match data with the appropriate quality-of-service tier based on business requirements. **The net effect is to rationalize and lower overall storage acquisition costs** – a fine idea in an era of never-ending data growth.

First, Sun added the *Sun StorEdge 6120* and *6320* storage systems to its modular, midrange family. The SE6120 scales to 12.2 TB with 2 Fibre Channel host connections; the larger SE6320 scales to 45 TB with 22 connections. Both support switched fabrics and include a solid range of software features with the base system: LUN masking/mapping, storage policies, SAN and array management, multi-pathing, point-in-time copy, and remote replication. *Storage policies* is a new feature that lets an administrator select pre-defined LUN configurations that are tuned for specific application workloads (e.g., random I/O, sequential I/O, or OLTP). **This simplifies management and delivers storage tiers within the array.**

Infinite Mailbox is an automated e-mail archiving and management solution. It backs up data and manages growing e-mail repositories through policy-based archiving. Based on characteristics such as age or size, it automatically moves e-mail to less-expensive media like tape, optical, or ATA disk arrays, while still providing users access to them. **This saves on storage costs, improves application performance, and is an example of tiered storage at the application level.**

N1 Data Platform is a network-resident platform that delivers block virtualization across multiple storage arrays, point-in-time copy, and centralized management. During Q2, Sun will roll out N1 Data Platform support for Sun StorEdge 3000, 6000, and 9000 series, as well as third-party arrays from EMC and HP. **By encompassing multi-model and heterogeneous storage, and consolidating services in the network, N1 Data Platform will deliver a next-generation storage solution with a higher level of efficiency and cost-effectiveness. Among other things, it will be capable of tiering storage across multiple arrays and even an entire infrastructure.** Read on for the details.

### IN THIS ISSUE

➤ Sun StorEdge 6000 Family .....	2
➤ Sun Infrastructure Solution for Infinite Mailbox .....	3
➤ N1 Data Platform .....	3
➤ Conclusion .....	4

## Sun StorEdge 6000 Family

Midrange storage has become very popular lately because it strikes an attractive balance of price, performance, and scalability. It is a good fit for many applications, both in large enterprises and smaller ones. **Sun recently refreshed its midrange offering with the new Sun StorEdge 6120 and 6320 storage systems.** They are based on a modular, building-block architecture that scales performance and capacity linearly in discrete units. The systems offer 2 Gbit/s Fibre Channel (FC) host connections and support LUN masking/mapping in a storage area network (SAN) environment. The SE6120 is a single array with one or two RAID controllers and scales to 84 drives. The SE6320 is a system of arrays that scales in controller-pairs up to 308 drives. This more scalable system also offers non-disruptive firmware updates, an integrated management station, and a remote monitoring and automatic call-home feature delivered through the *Sun StorEdge Remote Response Service*. The SE6120 is upgradeable, with data in place, to the SE6320. (See the box on the right for specifications.)

Both systems support *Solaris*, *Windows NT/2000*, *AIX*, *HP-UX*, and *Linux* host server operating systems, allowing them to plug into heterogeneous environments. Drive options (FC) include 36 GB @ 15k RPM, 73 GB @ 10k RPM, and 146 GB @ 10k RPM. RAID 0, 1 (1+0), and 5 are supported. The systems support multiple workload profiles by mixing drive types and RAID groups within an array. They achieve high availability through redundant controller pairs, no single point of failure, and proactive fault detection. They also support the CIM standard for open management.<sup>1</sup> List prices start at \$24,318 for the 6120.

The following software features are included with the base price of the SE6120 and SE6320:

### New Sun StorEdge 6000 Models At A Glance

#### SE6120 Array

# Disk drives.....	7 to 84
Max raw capacity.....	12.2 TB
Max LUNs.....	64
# RAID controllers .....	1 or 2
FC host ports .....	1 or 2
Cache .....	1 or 2 GB

#### SE6320 System

# Disk drives.....	14 to 308
Max raw capacity.....	45 TB
Max LUNs.....	704
# RAID controllers .....	2 to 22
FC host ports .....	2 to 22
Cache .....	2 to 22 GB

- ***Sun StorEdge Configuration and Health Services*** – Centralized, remote monitoring and management of all deployed systems,
- ***Sun StorEdge Enterprise Storage Manager*** – SAN topology mapping, health monitoring, and notification;
- ***Sun StorEdge Traffic Manager*** (Solaris only included, though support for other operating systems is available) – Server-based fabric path failover and load balancing for enhancing availability and performance;
- ***Sun StorEdge Availability Suite*** (Solaris only) – Server-based point-in-time copy and remote replication for business continuity and non-disruptive backup and data re-purposing; and
- ***Storage Policies*** – Pre-defined LUN configurations for specific application workloads. This is an innovative feature that simplifies LUN configuration. Since application workloads have different performance requirements, Storage Policies offers a variety of embedded profiles such as random I/O, sequential I/O, and online transaction processing. It automatically configures a LUN's RAID structure and

<sup>1</sup> See Sun Lays Down the Gauntlet with CIM Support in **The Clipper Group Captain's Log** dated September 20, 2002, at [www.clipper.com/research/TCG2002031.pdf](http://www.clipper.com/research/TCG2002031.pdf).

caching algorithm<sup>2</sup>, according to the profile selected, so an administrator does not have to be an expert in the nuances of these tuning parameters. **It also facilitates the establishment of multiple storage classes within a system to more precisely meet application requirements and minimize storage costs.**

The refreshed Sun StorEdge 6000 family appears to be a good value in the midrange segment. Its modular, pay-as-you-grow expansion and competitive pricing will appeal to cost-conscious consumers. **It is especially attractive to Solaris customers who can take advantage of the replication and multi-pathing software features that are included in the base system price.**

### Sun StorEdge Solution for Infinite Mailbox

Nobody can live without e-mail anymore – it's an essential business communications tool. But the growing volume of e-mail, business and regulatory requirements to archive it, and general backup and recovery issues become a lot for an administrator to manage. **Sun's answer is the Sun Infrastructure Solution for Infinite Mailbox, a new automated e-mail archiving and management solution.** It archives and backs up e-mail automatically based on policies, while preserving the users' ability to access them.

The Infinite Mailbox software runs on a dedicated archive server in conjunction with an agent on a *Lotus Domino* mail server. (Sun plans to add support for *Microsoft Exchange*, *Sun ONE Messaging Server*, and *Oracle Email* in the future.) Based on user-defined characteristics of age or file size, it automatically moves e-mail to secondary and less-costly storage media such as tape, optical, or ATA disk arrays. The media can be WORM (Write-Once-Read-Many), if necessary for regulatory compliance. Infinite Mailbox leaves stubs pointing to archived files in the primary database. If a

user needs access, it can quickly retrieve and restore them to the primary database. Finally, full text searching is available – an important feature for making practical, timely use of the archived data.

Infinite Mailbox offers several benefits:

- **Helps protect company-proprietary information** contained in e-mails (backup);
- **Retains records** for regulatory compliance and general business purposes;
- **Improves performance** of the mail server and avoids or defers hardware upgrades by pruning e-mails from the database; and
- **Lowers storage costs** by archiving files to less expensive media.

The last benefit is an example of tiered storage at the application level. **By enabling the mail server to sort and move files based on age and size, it more precisely aligns data with the appropriate storage tiers.**

### N1 Data Platform

The new *N1 Data Platform* is a foundational component of Sun's next-generation storage architecture. **It is a robust, high-performance platform for consolidating storage services in the network.** The network is shared territory among all servers and storage arrays where common, value-enhancing services can run.<sup>3</sup> It is the point of greatest leverage, broadest scope, highest efficiency, which is why Sun has chosen this new storage product to bear the namesake of its future computing vision of a virtualized, unified data center.

From a hardware perspective, N1 Data Platform contains 16 or 32 fabric ports. It is designed for data-center availability with fully redundant, hot-pluggable components and non-disruptive firmware upgrades. From a software perspective, **its primary**

<sup>2</sup> Sun will add others parameters, like drive size and speed, later.

<sup>3</sup> See *Intelligent Storage Networks – Creating A More Cost-Effective Storage Infrastructure* in **The Clipper Group Explorer** dated February 22, 2002, at [www.clipper.com/research/TCG2003006.pdf](http://www.clipper.com/research/TCG2003006.pdf).

**function is virtualization – consolidating and abstracting storage capacity at the LUN level and presenting it to application servers as a single, dynamic pool.** Administrators can transparently add, reallocate, partition, concatenate, and securely provision capacity from this pool of even heterogeneous storage arrays. N1 Data Platform also offers point-in-time copy services, and additional functionality will follow.

In its first incarnation, N1 Data Platform supports Solaris and Windows NT/2000 server operating systems. Supported storage arrays (which will be rolled out in phases during Q2) are the Sun StorEdge 3000, 6000, and 9000 series as well as particular models of EMC's *CLARiiON* and HP's *StorageWorks* product lines. And Sun will certainly add more in the future. The list price starts at \$112,600, including startup services.

This network-centric storage architecture offers several advantages:

- **Lower operating costs** – Virtualization streamlines and centralizes storage management tasks so administrators can handle more capacity per person. Furthermore, it is easier to manage one super-instance of software in the network (e.g., point-in-time copy) than many, possibly different ones on the various storage arrays and servers. All of this cuts back on operating costs, the largest portion of storage TCO.
- **Lower acquisition costs** – By supporting many makes and models of storage, N1 Data Platform gives customers the flexibility to buy best-value storage for each tier. It also facilitates storage tiering across multiple arrays by, for instance, allowing high-end storage for performance-critical applications and less-costly storage for others. Virtualization can improve utilization of storage assets. Furthermore, moving intelligence into the network could potentially save on server- or array-based software licenses. All help lower hardware and software acquisition costs.

- **Improved quality of service** – Finally, the broad scope and application of consolidated storage services can improve storage quality of service overall.

In short, it's a more streamlined and cost-effective approach.

## Conclusion

**Sun continues to build out its storage offering.** The new Sun StorEdge 6000 family, Sun Infrastructure Solution for Infinite Mailbox, and N1 Data Platform serve quite different purposes. Enterprises that want midrange storage – especially Solaris customers – should have a look at the new SE6120 and SE6320. Infinite Mailbox is for those who need to get their arms around e-mail. For those who want to take a big step toward a more efficient storage infrastructure, there is the N1 Data Platform.

**The theme of tiered storage that runs through the different products is not necessarily intentional, but it's indicative of the importance of this growing trend.** Airlines offer first-, business-, and coach-class seats. A service station offers regular, mid-grade, and premium gasoline. Why shouldn't an enterprise deploy different quality-of-service storage tiers? It's a simple matter of cost optimization, and the recent explosion of storage networking allows the concept to be exploited like never before.<sup>4</sup> **So as you expand your infrastructure, look for products that create or take advantage of storage tiers.** It's a smart way to save on a major IT expense.



<sup>4</sup> For more details, see *Tiered Storage Classes Save Money – Getting The Most Out Of Your Storage Infrastructure* in **The Clipper Group Explorer** dated August 29, 2002, at [www.clipper.com/research/TCG2002030.pdf](http://www.clipper.com/research/TCG2002030.pdf).

### **About The Clipper Group, Inc.**

**The Clipper Group, Inc.**, is an independent consulting firm specializing in acquisition decisions and strategic advice regarding complex, enterprise-class information technologies. Our team of industry professionals averages more than 25 years of real-world experience. A team of staff consultants augments our capabilities, with significant experience across a broad spectrum of applications and environments.

- **The Clipper Group can be reached at 781-235-0085 and found on the web at [www.clipper.com](http://www.clipper.com).**

### **About the Authors**

**Michael Fisch is Director of Storage and Networking with The Clipper Group.** He brings over seven years of experience in the computer industry working in sales, market analysis and positioning, and engineering. Mr. Fisch worked at EMC Corporation as a marketing program manager focused on service providers and as a competitive market analyst. Before that, he worked in international channel development, manufacturing, and technical support at Extended Systems, Inc. Mr. Fisch earned an MBA from Babson College and a Bachelor's degree in electrical engineering from the University of Idaho.

- **Reach Michael Fisch via e-mail at [Mike.Fisch@clipper.com](mailto:Mike.Fisch@clipper.com) or at 781-235-0085 Ext. 25. (Please dial "1-25" when you hear the automated attendant.)**

### **Regarding Trademarks and Service Marks**

**The Clipper Group Navigator, The Clipper Group Explorer, The Clipper Group Observer, The Clipper Group Captain's Log,** and "*clipper.com*" are trademarks of The Clipper Group, Inc., and the clipper ship drawings, "*Navigating Information Technology Horizons*", and "*teraproductivity*" are service marks of The Clipper Group, Inc. The Clipper Group, Inc., reserves all rights regarding its trademarks and service marks. All other trademarks, etc., belong to their respective owners.

### **Disclosure**

Officers and/or employees of The Clipper Group may own as individuals, directly or indirectly, shares in one or more companies discussed in this bulletin. Company policy prohibits any officer or employee from holding more than one percent of the outstanding shares of any company covered by The Clipper Group. The Clipper Group, Inc., has no such equity holdings.

### **Regarding the Information in this Issue**

The Clipper Group believes the information included in this report to be accurate. Data has been received from a variety of sources, which we believe to be reliable, including manufacturers, distributors, or users of the products discussed herein. The Clipper Group, Inc., cannot be held responsible for any consequential damages resulting from the application of information or opinions contained in this report.