THE CLIPPER GROUP

Navigator™

Sandial Shadow 14000 —
Optimizing the N in SANs

Analyst: Anne MacFarland

Management Summary

You measure, not just to find out what is happening, but also to find out where it is happening and, eventually, why it is happening. If there is a hiatus in measurability, there is a hiatus in manageability, and isolating a fault becomes a matter of probability and the remedy a matter of bumbling trial and error.

In storage area networks (SANs), the network itself has been the occasion of hiatus. Most switches will report on their own functionality and on the connectivity they support, sometimes even to the zoning of ports, but not on the nature of the data flow, or on the quantity of the traffic that can be attributable to a particular application. The application's demand is monitored on the application's server. It is monitored on the storage array in terms of hits on the application's assigned LUNs. But the pipe between the two has been like a garden hose. If there was a problem you have to walk the length of it and hope to find a visible kink or leak. Failing that, you haul out another hose. If you want more throughput, you connect another hose to another spigot. Similarly, many switches use alternate pathing and trunking because they can only manage the network at the ends.

What you really need in SANs is the ability not just to see the traffic flows by application, but to be able to control them by application. And, with today's fan-in-fan-out system architectures, you want the ability to support multiple data streams and still give each application its due quality of service. If throughput degrades, you want to be able to share that degradation *unequally*, putting the constraint on those applications where constraint can best be borne.

Sandial's *Shadow 14000* is a director-class switch – and more importantly, a backbone-style switch that uses time-division multiplexing to manage the quality of each data stream that passes through its ports. It is a switch with communications smarts, but designed for data. It may be just what your enterprise needs to turn its SAN from a good thing tainted by management limitations to complete, resounding success. Shadow has been generally available since October of last year, but Sandial has postponed the official launch until the independent interoperability tests were complete and there were paying customers. For many storage administrators, these endorsements will add credibility to the capability of the product. Do you want your SAN to work better? For more details, read on.

Why SANs Need to Manage Their Pipes

In today's consolidated environments, opportunities for network congestion are as pervasive as the common cold. With congestion comes the need to stage reductions in service in a way that does not impact critical business applications (and, of course, does not drop packets). There are some enterprise workloads, like file and print serving, which can proceed at a slightly more leisurely pace than the two-stage-commit transactions of e-commerce. **The ability to fine-tune data flows supports server- and storage-consolidated environments better**. And this is only the first layer of efficiency that Sundial's *Shadow 14000* delivers.

Certain applications need more bandwidth at certain times of the fiscal year (close of month, close of quarter, close of year). The rest of the time, workloads may be lighter. At a finer granularity, business processes, and the applications that support them, have occasions of pause. **The ability to capture such unused network capacity adds another degree of efficiency.** Managing this intricate dance of occasional bandwidth need cannot be done well by a myriad of servers without considerable messaging overhead. To manage it from the array is an after-the-fact game of catch-up. To be done in real time, this management is best done by an in-band switch, where bandwidth allocations can respond to actual traffic. This does not obviate the benefit of managing data streams at the server and/or storage array, but it makes the palette of manageability complete.

With Web Service-based application integration, the traffic patterns in back-end networks are even more complex. Some of the traffic will be for secondary use of the information, which may not demand the same quality of service as those for the application's primary processes. New spikes of data access and network usage may develop. They may not always be predictable. **Automating network and system management according to**
business-based policies will be the key to simplification of management.

Network Optimization: A Prerequisite for Storage as a Utility.

If your enterprise IT environment is going to support utility pricing, the price must be high enough to keep you in the black, but low enough to compete with alternative sources. You will need to adopt the same consolidation and high-utilization strategies that utility service providers are using. And in the long run, once the new modes of management are familiar, you will want to use them anyway. The time to start that familiarization is now.

A utility environment is no place for an unmanageable element, even if it is just the march of photons down a fiber. It is time to start a transition to more manageable elements. The Shadow 14000 supports utility-grade network manageability, and Sandial

---

The Shadow 14000 at a Glance

- Supports up to 288 2-Gbps network interfaces, with any-to-any connectivity and non-blocking architecture

- Full redundancy architecture

- OS agnostic

- Servicable from the front

ConnectIQ switch module

  - Active-active architecture with stateful failover

  - Independent data and control path

  - Managed bandwidth scheduler

  - Bandwidth on demand

  - *ShadowView* Web-based management

Utiliport Module

  - 2-port granularity

  - generic blade populated by a choice of Technology Interface Modules (TIMs)

What Shadow Works With

Storage

ADIC	HP
Dell	IBM
EMC	NStor
Hitachi	StorageTek

Edge Switches
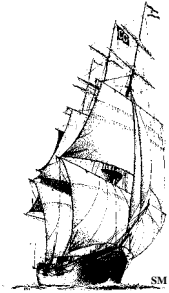
Brocade

McData

Routers

Crossroads

LightSand

Applications

Spirent

StoreAge

Conclusion

Sandial's Shadow 14000 Switch is part of a new breed of products, built for the needs of utility environments. It gives manageability to the pipes of a SAN. Like the main bearings on a car, it allows you the full manageability to get the full use out of your assets. If you anticipate the need to run optimized, consolidated IT environments (and who does not), this is a capability you may want to buy sooner rather than later.

has a roadmap for building out more advanced manageability, and integrating more storage management capabilities, in the future.

The *ConnectIQ* managed bandwidth scheduler allows administrators to create Application Policy Groups based on business priorities. The GUI allows the administrator to assign switch ports to policy groups, and to set bandwidth policies for the different groups. Non-policy based connections get default network service levels. Shadow then enforces the policies. The administrator can oversee the environment through policy report cards, which allow drill-down to individual traffic flows.

The detail of metrics and granularity of manageability is a key component needed to assure that an application is getting the requisite response from the tier of storage assigned to it in tiered storage environments. It also can support the mutability of quality of service levels dictated by information lifecycle management schemes.

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.*

About the Author

Anne MacFarland is Director of Enterprise Architectures and Infrastructure Solutions for The Clipper Group. Ms. MacFarland specializes in strategic business solutions offered by enterprise systems, software, and storage vendors, in trends in enterprise systems and networks, and in explaining these trends and the underlying technologies in simple business terms. She joined The Clipper Group after a long career in library systems, business archives, consulting, research, and freelance writing. Ms. MacFarland earned a Bachelor of Arts degree from Cornell University, where she was a College Scholar, and a Masters of Library Science from Southern Connecticut State University.

➢ *Reach Anne MacFarland via e-mail at Anne.MacFarland@clipper.com or at 781-235-0085 Ext. 28. (Please dial "1-28" 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.