

## Candera Announces Enterprise-Level ATA Appliance for Multi-Tier Storage Infrastructures

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### Management Summary

The growth of storage has become the largest single expense in the Information Technology (IT) Infrastructure of almost every enterprise. The cost of the acquisition, deployment, and management of that resource has risen to the attention of senior executives throughout the enterprise. CIOs everywhere have implemented government and industry regulations that require the long-term preservation of data in order to satisfy internal auditors as well as the SEC. They catalog, index, and preserve terabytes of email in order to exonerate (or convict) employees accused of illegal acts. Within the medical industry, for example, the Health Insurance Portability and Accountability Act (HIPAA) requires the preservation of health records, including a wide variety of digital diagnostics, for the life of the patient, and more. Many facilities will retain the medical records of minors until they are 21 years of age. These requirements and many others, both mandated and recommended, have the potential to send the IT budget for storage well beyond historical levels.

To control the costs of this expansion, lower cost storage is required, and procedures for Information Lifecycle Management (ILM) are needed to determine where information is stored. The purpose of ILM is to determine the value of data at various times in its life and assign it to the storage whose performance, and costs, best approximate the value of that data to the enterprise. This often requires the transition of data from one class of storage device to another, as that value changes in a multi-tiered storage network. These classes are distinguished by several factors including Mean Time Between Failures (MTBF) and recovery time. The storage needed to process this growth is often contained on multiple heterogeneous devices connected to a variety of hosts running different operating systems and interconnected into an enterprise-level Storage Area Network (SAN). That storage is typically comprised of RAID arrays with different levels of resiliency (mirroring vs. striping), configured by the administrator, and at times, different qualities of service.

In order to improve the efficiencies of distributing this information across the SAN, data center management is constantly on the alert for storage gateways and appliances to bring enterprise class features and centralized management tools to the SAN. These devices also need to lower the complexity and cost/GB of that storage. Candera is one of the new companies determined to provide enterprises with quality storage solutions at an affordable price. A young company, founded in 2000, Candera introduced in 2003 a network storage controller designed to move the storage intelligence into the network and out of the array. **Candera has now introduced a scalable ATA appliance to enable the quick deployment of high-capacity storage in the digital-content workplace.** To learn more about Candera's solution, please read on.

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## The Storage Environment

In any ILM environment, there is an assortment of high-cost, high-performance storage arrays that the enterprise can add which will increase the capacity, and the complexity, in the storage network. Every major enterprise has a SAN with at least one of these enterprise-level arrays, whether from EMC, IBM, Hitachi, or someone else. Perhaps, even more than one. Natural growth, rapid expansion, and mergers are just three examples of environments in which data centers have added heterogeneous storage arrays to a legacy SAN in order to respond to user demands for more capacity, resulting in more complexity. Unfortunately, **all of the information in the enterprise does not carry the same value.** If it did, the CIO could justify a single, scalable, high-performance storage array for everything. In fact, the value of some enterprise data changes over time, decreasing over the weeks and months until it can be archived. This aging provides a significant opportunity to improve the overall effectiveness of the storage network, and to reduce costs at the same time.

**In order to achieve this, the SAN needs to have access to lower-cost storage to support the seldom-used data that propagate throughout the SAN.**<sup>1</sup> Because of the lowered cost, these arrays may have less scalability than enterprise arrays and they may have reduced functionality. In fact, if the referenced files are archives that never change, they may need less functionality. However, every time that the data center adds another heterogeneous platform onto the SAN, complexity tends to increase, some times exponentially.

Last year, in order to simplify the support for heterogeneous SANs, Candra introduced the *SCE510 Cluster*, an intelligent gateway that moves SAN management out of the servers, out of the arrays, and into the network. This year, to support the

expanding need for high-capacity storage, **Candra has added scalable ATA arrays to the SCE510. This creates a networked ATA appliance that enables customers to deploy a new tier of high-capacity, reliable, and interoperable storage at a price significantly lower than traditional alternative products.** Because this new appliance includes the SCE510, let's take a step back and review the functionality of this specialized gateway before examining the further impact of evolving it into an ATA storage appliance.

## Candra SCE510 Cluster

Announced in September 2003 to simplify SANs, the SCE510 Cluster enables the data center to centralize all of the SAN islands under its domain into a single heterogeneous SAN. The SCE510 does this with one common management interface – The Candra *Storage Manager* – by moving the intelligence into the network. Candra describes the cluster architecture as “purpose-built” because they designed it for the express purpose of lowering the cost, improving the service levels, and enhancing the productivity of datacenter storage administrators. Using their own patent-pending *U\*Star* architecture, Candra has created a storage control engine that enables IT departments to interconnect any Fibre Channel storage device with any server, through any switch, seamlessly. Moreover, because of the cluster design with embedded full active-active failover capability, they have introduced a highly available and highly reliable engine for mission-critical environments. (See Exhibit 1 on the next page for hardware characteristics.) Management features of this networked-based controller include:

- Single-step automated provisioning
- Slicing and concatenating logical unit numbers (LUNs) across heterogeneous storage devices
- Logical Topology Mapping with Real-Time State Status

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<sup>1</sup> See *Tiered Storage Classes Save Money - Getting The Most Out Of Your Storage Infrastructure* in **The Clipper Group Explorer** dated August 29, 2002, at <http://www.clipper.com/research/TCG2002030.pdf>.

- Real-Time I/O and Capacity Reporting and Statistics
- Centralized Fault Management with Root Cause Analysis.

The SCE510 provides up to 16 fully redundant Fibre Channel ports that control I/O in a heterogeneous SAN. Because Candera designed custom intelligence behind every port, rather than centralizing it on a blade or commodity server, error conditions are contained within a single port enabling the gateway to remain operational in the event of a port failure. The *SCE510* also provides full online serviceability to keep applications running in case of a node failure or software upgrade.

### Candera ATA Appliance

By combining a series of ATA drawers with a version of the SCE510 network storage controller focusing on ATA storage, Candera is now introducing **an enterprise-class serial ATA appliance with full RAID compliance**, from mirroring to striping with parity. This appliance enables the rapid deployment of a new tier of high-capacity, low-cost storage that is both reliable and interoperable, under the control of the *Storage Manager*, a thin-client Java-based GUI that communicates with the appliance over IP. **It also addresses the issue of complexity caused by integrating more paths between heterogeneous servers and the SAN thus reducing management costs because all hosts see Candera as a target. All storage sees Candera as a host.**

The *Candera ATA Appliance* is pre-configured with 4, 8, 12, or 16TB of storage, along with up to 4GB of cache, eight 1 or 2Gb/sec auto-sensing Fibre Channel ports, and support for up to 48 host bus adapter ports. It is scalable up to 180TB in a custom-built configuration. The ATA Appliance also protects the enterprise's initial acquisition investment in it by allowing the datacenter to upgrade the network controller portion of the appliance to the full functionality of the SCE510, including the attachment of Fibre Channel

#### Exhibit 1 SCE510's Hardware Characteristics

- Two-node Active-Active High Availability Cluster
- Sixteen 2Gb Fibre Channel Ports – Autosensing @ 1 and 2Gb/s
- Up to 48 Host Connections and 24 RAID Storage Connections
- Dual Hot-Swappable Fan, Power Supplies and A/C Power Cords
- 10/100 Ethernet Connectivity for Cluster Management

arrays. **With scalable configurability up to 180TB, the data center can import the current legacy storage, with the existing data-in-place, into the intelligent storage pool.**

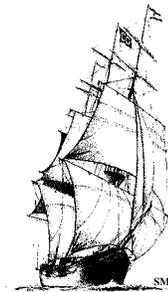
Priced at \$86,500 for a 4TB, 7U configuration, including the management software, this appliance is significantly less expensive than Fibre Channel or traditional ATA alternatives. However, at that price, it is clearly aimed at enterprises trying to create a new tier for their mission-critical network storage, as an enterprise could expand its file/print and archival application storage requirements for far less. There are several characteristics that any storage appliance must have to be considered as an additional tier in an ILM environment. Primarily, the appliance must be Reliable, Available and Scalable, i.e., it must have RAS functionality.

With two-nodes at the heart of the SCE510 Cluster, the Candera Appliance provides a fully resilient, active-active, high-availability environment with redundant paths via its unique *U\*Star* architecture. Having multiple paths assures access from the SAN-attached, heterogeneous servers to the ATA storage in the appliance in case of a hardware failure or service requirement. When the cluster is operating normally, the

ATA appliance can improve the throughput between the servers and ATA storage by distributing the I/O activity between the host bus adapters in the servers and RAID controllers in both nodes. The ATA Cluster does this in conjunction with the host-based load balancing software found in all enterprise-level operating systems. Because of the focused design and unique I/O sequencing algorithms of the network controller, this solution can scale in performance to levels normally found in Fibre Channel arrays.

## Conclusion

The CIO of any enterprise with the need to expand the enterprise SAN to include resilient, high-capacity, lower-cost storage in a multi-tiered architecture should look at Candera's ATA Appliance. **The high-availability characteristics of this array should meet the mission-critical needs of many environments.** Based upon a proven architecture, the SCE510, and Candera's Storage Manager, **the rapid deployment of this new, ATA tier of storage will enable the enterprise to evolve its storage network and continue its enterprise processing requirements.**



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