



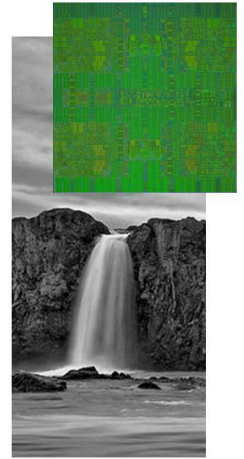
IT leaders and Data Center operators need to embrace efficient systems and storage practices to protect the environment and eliminate unnecessary electricity expenses. A commissioned Environmental Protection Agency study that looks at Data Center power usage—authored by Jonathan Koomey, Professor at Stanford University—found that 1.2% of all power consumed in the United States could be attributed to the needs of Data Center operations alone¹. The EPA believes this figure could double over the next five years.

Before we can find a solution to this problem, we need to understand the origins of the problem. From a storage perspective, the growing trend toward higher speed disk technology is driving much of the power and cooling requirement in the Data Center. IT staff are moving away from tape-based technology for daily backup and recovery requirements, and are instead moving to disk—further increasing the demand for power and cooling. Here is a comparison of the Power Consumption and Heat Output for a popular Disk Array and Tape Library.

	Power Consumption	Heat Output
EMC Clariion CX4 Model 240 Disk Array (base model)	270 watts per hour	930 BTU per hour
Quantum Scalar 1500 Tape Library (base model)	79 watts per hour	269 BTU per hour

Many Data Center Operators are making critical decisions about restricting the growth of their Centers due to space issues and environmental concerns. The answer is not to stop progress, but to use the technology in a more efficient manner thereby reducing the cost and environmental impact of IT systems.

Signal Creek Technology works with IT organizations to look closely at both technology and practices as part of any green storage initiative. Two important trends in this direction are data deduplication and the control of endpoint power usage.



Data Deduplication

The typical IT environment consists of hundreds of thousands of duplicate data objects. Deduplication prevents redundant data objects from being stored. If there is less data stored there will be a decreasing demand for disk and a reduction in energy requirements. NetApp, a leader in deduplication technology, estimates that for every 100 TBs of data deduplicated, there will be production storage capacity savings of as much as 59% and power and cooling savings could be \$32,000.

Signal Creek Technology is expert at implementing deduplication. By performing a byte-by-byte analysis before removing any duplicate data, and schedule deduplication activities during off-hours, Signal Creek Technology enables the most efficient utilization of storage resources. Applications will continue to perform at peak capacity while the enterprise realizes reduced storage requirements.

Endpoint Power Usage

Thin clients, Netbooks and virtualized environments require less storage hardware and power. Unfortunately, only the latter technology, virtualization, has been widely-adopted in the IT world. Additionally, in contrast to many Data Center operations practices, end-users are asking for more and more control over their direct environment. They have come to expect that their local hard drive will exceed 500 Gigabytes of capacity while battery life for laptops exceeds eight hours on a single charge. All of this performance and capacity negatively impacts energy requirements.

There are ways that the Data Center can "take back" responsibility for power management. For example, Symantec's Altiris Client Management Suite allows administrators to set power management policies and apply them to all endpoints, even virtual systems and thin clients. From the Data Center it's possible to power-off desktops and other endpoints outside normal office hours, and power them back on when needed. By better managing idle hardware, the enterprise can reduce IT's energy footprint and attain significant energy cost savings.

Power and cooling for the Data Center are not available in unlimited quantities. On the supply side, electric utilities already struggle to keep up with demand. Some IT Managers are finding that they cannot increase the amount of power they source from their local power grid. There is a growing awareness that technology advancements must be matched by a reduction in energy demands, particularly because power costs are becoming prohibitive.

The consultants of Signal Creek Technology can help reduce duplicate data, optimize archiving, dynamically store data on the right storage tier, and better manage endpoint power requirements.



For additional information please contact expertservices@signal-creek.com

¹ Jonathan G. Koomey, Ph.D, "Estimating Total Power Consumption by Servers in the U.S. and the World," February, 15, 2007.