

SUN AND BROCADE THE GREEN COMBINATION FOR YOUR DATACENTER

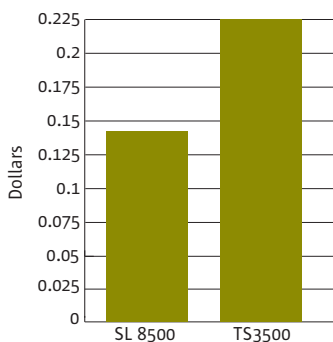
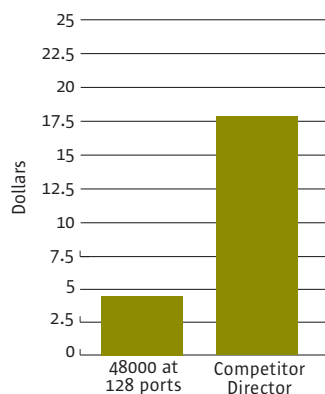
Vendor Selection
White Paper
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Abstract

This white paper reviews the energy consumption of tape libraries and Director-class Fibre Channel switches that make up an enterprise Tape SAN. The combination of the Sun StorageTek SL8500 Tape Library and the Brocade 48000 Director can reduce the carbon footprint and energy costs over competitive offerings. They are ideal for long-term, eco-responsible data protection and archive, and can help you keep your business in the green.

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Power Cost/Mount (K)**Power Cost/4 Gb Port**

Executive summary

Reducing a datacenter's energy consumption decreases its carbon footprint. Beyond good stewardship of the earth, it makes good business sense to select products that will decrease the monthly electric bill. This white paper reviews the energy consumption of enterprise tape libraries and Director-class fibre channel switches. These products are discussed together because the goal is to share the backup resource across as many servers as possible.

The results of this energy analysis shows that the Sun StorageTek SL8500 and the IBM TS3500 with a similar number of cartridges have comparable energy costs. Cartridge exchange rate is another important specification when selecting a tape library. The SL8500 is almost two times faster than the IBM library so when considering the energy cost per cartridge mount, the Sun library is two-thirds of the TS3500.

Comparing the Brocade 48000 Director against a competitor's Director shows a dramatic difference in energy consumption. The competitor's Director can only have 132 ports configured that are capable of 4 Gb/s data rates without over-subscription. The Brocade 48000 enables simultaneous uncongested 4 Gb/s operation on not only the 128-port configuration but also the 256-port and 384-port configurations when local switching best practices are utilized with the 32- and 48-port blades.

LTO and mainframe tape drives support very high data transfer rates so an over-subscribed port could throttle performance. When comparing the Brocade 48000 at 128 ports to the competitor's Director at 132 ports, the Brocade 48000 energy savings is more than four times greater per port than the competitor's Director. Savings are seven times greater with Brocade when using 32- or 48-port blades.

The annual power cost difference between operating a Sun StorageTek SL8500 tape library and a IBM TS3500 is negligible.

SL8500 vs. IBM TS3500 power consumption comparison

The following tables show the power cost for operating a library with twenty tape drives. Both LTO and mainframe tape drives are considered. As the data indicates, there is no appreciable power consumption difference between the SL8500 and the IBM library.

Power cost comparison — LTO 3 drives		
	IBM TS 3500	Sun StorageTek SL8500
Watts	1,185	1,380
Annual kilowatt hours (24 x 365)	10,381	12,089
Electricity cost (\$/kWhr)	\$0.0986	\$0.0986
Annual power cost	\$1,024	\$1,192

Power cost comparison — Mainframe drives		
	IBM TS 3500	Sun StorageTek SL8500
Watts	2,455	2,360
Annual kilowatt hours (24 x 365)	21,506	20,674
Electricity cost (\$/kWhr)	\$0.0986	\$0.0986
Annual power cost	\$2,120	\$2,038

The Sun StorageTek SL8500 is almost two times faster than the IBM TS3500. When considering the power necessary to support its faster cartridge exchange rate, the SL8500 is two-thirds the energy cost of the IBM library.

SL8500: Greener at performance

When factoring other important considerations, especially performance, the SL8500 is significantly more power efficient than the IBM TS3500. In a typical library configuration with 6,000 slots and redundant robotics, the SL8500 provides roughly 1100 cartridge exchanges per hour where the TS3500 only supports 600 exchanges. Considering that performance is critical in most datacenters, the SL8500 is two-thirds the cost of the TS3500 when considering the number of mounts per the cost of power.

Power cost per mount comparison — LTO 3 drives and redundant robotics		
	IBM TS 3500	Sun StorageTek SL8500
Watts	1,185	1,380
Annual kilowatt hours (24 x 365)	21,001	14,016
Electricity cost (\$/kWhr)	\$0.0986	\$0.0986
Annual power cost	\$1,183	\$1,382
Cartridge mounts per hour	600	1,100
Mounts per year (K)	5,256	9,636
Power cost per thousand mounts	\$0.225	\$0.143

The Brocade 48000 Director is four to seven times more energy efficient than the competitor's Director on a 4 Gb port basis.

Comparing power consumption of the Brocade 48000 Director vs. a Competitor's Director

Fibre Channel Director-class switches are typically deployed with tape libraries to provide fault tolerant platforms for the delivery of massive connectivity and advanced storage services. Chassis-based Directors with bladed architectures have grown to support hundreds of connections per chassis. Both the Brocade and the competitor's Director switches support about 130 ports operating at a full 4 Gb/s data rate.

Power and cooling comparison of fibre channel directors		
	Competitor's Director	Brocade 48000
Number of ports @ 4 Gb/s without oversubscription	132	128/256*/384* * utilizing local switching on the blade
AC Watts*	2685	656/856/1056
Annual kilowatt hours (24 x 365)	23,520	5747/7499/9251
Electricity cost (\$/kWhr)	\$0.0986	\$0.0986
Annual power cost	\$2,319	\$567/\$739/\$912
Cost per 4 Gb port	\$17.57	\$4.43/\$2.87/\$2.37

* Estimated using competitor's documentation.

Summary

Many companies are reviewing their impact on the environment. Reducing energy consumption decreases the creation of greenhouse gases. This paper analyzed the two enterprise tape libraries and two Director-class fibre channel switch products. The Sun StorageTek SL8500 is two-thirds the cost of the IBM TS3500 when considering the energy cost per mount. The Brocade 48000 Director is four to seven times more efficient than the competitor's Director on an energy cost per port basis.

Together, the SL8500 library and the 48000 Director are the greenest combination for an energy efficient data center. The efficiency not only reduces datacenter electric bills, it also decreases cooling requirements. It minimizes or eliminates the need for data center infrastructure upgrades, such as new PDUs, power circuits, and larger HVAC units.

