

Interviews with Barry Elliott, Director of Capitoline and Mario van der Kroef, Global Marketing Director at Optelecom-NKF



**You'd be hard-pressed to find anyone nowadays who hasn't heard about global warming. It's literally a hot topic. Everything from driving a car or flying in an airplane to eating a steak supposedly increases the Earth's temperature. Did you know that some research now shows that every second you spend reading a web page emits 20 milligrams of CO2 into the atmosphere?**

**In an effort to decrease the carbon footprint of IT networks, many industry leaders, from manufacturers and systems integrators to data center designers, are creating and adopting more efficient and cost-effective technologies. One place they are starting is in the backbone of every networked computer room, namely, in the data center, where all the system components are housed. Data centers are major consumers of energy in the IT world and streamlining their use of resources can significantly increase the effectiveness of the entire network.**

## Reduce and reorganize

Data centers comprise an array of electronic equipment, from the IT equipment that actually carries out the tasks that allow us to use internets and intranets to the devices used for lighting or cooling the room. Data center designers and directors are therefore looking for ways to decrease the amount of power consumed both in terms of productive processes as well as in overhead costs.

“New data centers are the place to apply highly effective energy saving methods and technologies,” points out Barry Elliott, the Director of UK based Capitoline, a data center, IT infrastructure, and building technology consulting and training company that specializes in energy consumption reduction plans to help companies lucratively implement ecologically-aware and proficient data centers. “However, some simple measures can be taken in existing data centers to improve efficiency.”

Something to keep in mind for data center developments is, as the saying goes, what goes in must come out; the energy consumed by the devices actually doing the work produces an equal amount of heat that must ultimately be cooled. Some companies are therefore working to create low power technologies to reduce the total amount of electricity required by a data center.

Mario van der Kroef is the Global Marketing Director at Optelecom-NKF, manufacturer of advanced Siquira surveillance solutions. He gives an example of how

Optelecom-NKF using existing technology in inventive ways to decrease both monetary and resource expenditures. “We apply the technology Optelecom-NKF previously developed for power converters for solar panel technology,” explains Mr. Van der Kroef. “The result is that Siquira power supply cabinets are designed to efficiently consume electricity. Moreover, through the innovative design and sharing of resources, Optelecom-NKF is able to offer video servers that are both cost-effective and efficient.”

Consequently, employing technology from brands committed to the frugal use of resources and the development of sustainable solutions can help to cut power consumption in both the constructive and operational expenses of a data center.

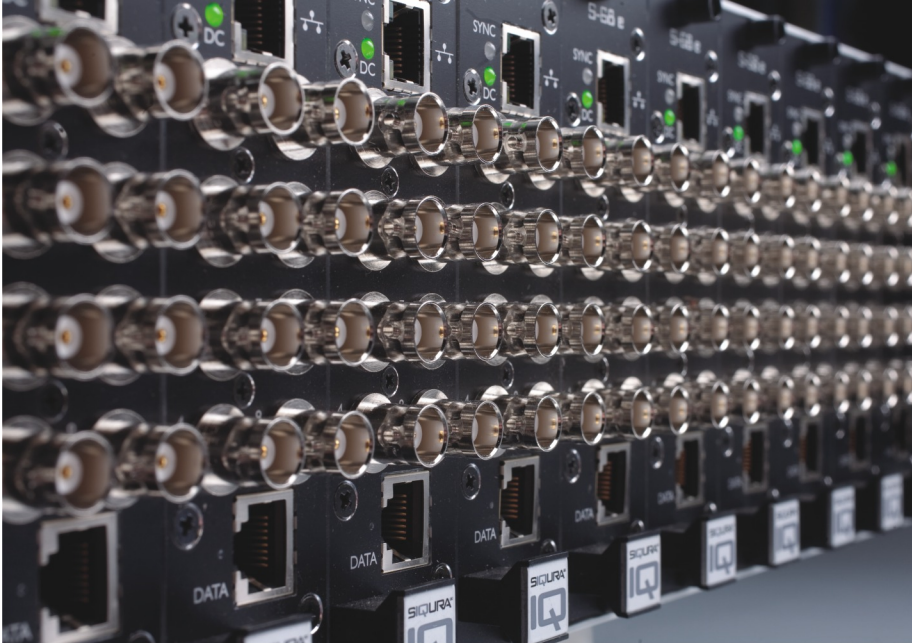


Barry Elliott



Mario van der Kroef

## Energy consumption in data centers



### Cutting the cost of cooling

Mr. Elliott describes a number of techniques in a white paper for Capitoline on how cooling systems can be renovated to improve efficiency and reduce energy consumption. Effectively insulating data centers and sealing cable entry points can effectively help to improve the competence of existing cooling techniques, as can the use of so-called free cooling options. By ensuring the efficiency of cooling systems and utilizing new cooling techniques, it is possible to cut overhead costs by more than half.

Free cooling involves using elements, such as air and water, from the surrounding environment to lower the temperature of the data center rather than using air conditioning systems. While free cooling systems can greatly reduce costs, they require the data center to be located in temperate latitudes.

“Data centers are generally located relatively close to where the networks are,” explains Mr. Elliott. “Most users want their data centers to be physically close despite the fact that moving data centers to cooler climates does incur some economic advantage. However, the

savings on free cooling do not always balance out the cost of moving a data center abroad and the appeal of having a data center within driving distance generally prevails.”

Although moving a data center to a temperate climate might not be a viable option for every business, many innovative advancements have been made in data centers that are already located in cooler areas. The City of Amsterdam, for example, aims to be CO<sub>2</sub> neutral in 2015, and the data center in this municipality's city hall is being renovated to reduce energy consumption. By using the old nuclear bunker under the city hall to house the new data center, water from the Amstel River (which flows past just outside the edifice) will be used in the cooling system. The warm water will then be used to heat the building, ultimately reducing the operational costs of both the data center and the city hall.

While this original undertaking will reduce power usage in Amsterdam's municipal facilities by more than half, it will take nearly ten years to recover the initial return on investment.

Barry Elliott comments, “People definitely need to look into the energy consumption

of their equipment and data centers, and this is something we stress in our training at Capitoline. But they also need to ask for a reasonable return on investment, generally within three years. So while some innovative technologies can make the carbon footprint of a data center relatively neutral, the rate of return on the initial investment can be very low. It could take ten or fifteen years to get your money back on such expensive technology and that is too much to ask of many companies.”

It is possible to easily reduce cooling costs by taking simple measures to ensure the efficiency of your current cooling system, such as making sure that cool air is not leaking out and that air flow is effectively cooling the data center and the equipment housed there. Modernizing a data center can also include completely overhauling the system and working to reduce overhead costs as much as possible through pioneering projects and creative technologies, such as those being initiated in Amsterdam, though these ventures can come at a significant cost that takes many years to recover.

As a result, designers and administrators naturally need to weigh the pros and cons of their various endeavors to reduce electricity expenditures. Cooling is not, however, the only way to cut costs and energy consumption in a data center. By taking a closer look at the equipment actually doing the work, new technologies can be utilized to decrease the power usage of the IT equipment and hence also the cooling costs.



## Energy consumption in data centers

### Replacing legacy equipment

“Since IT equipment generally uses over two-thirds of the overall power consumed by a given data center,” says Mr. Elliott, “replacing legacy devices with newer equipment can often cut down on electrical and monetary expenses.”

As Mr. Elliott implicitly points out, data center designers and administrators are not the only ones thinking about streamlining energy consumption. Many companies are coming up with increasingly efficient equipment; for example, there is a focus on designing products that offer more capacity in less space and for less power.

One example of this trend towards high density solutions is the eight-channel Siquira S-68 E video server from Optelecom-NKF. “The S-68 E uses a mere 0.9 watt per channel, making it the most energy-efficient encoders available in the video surveillance industry,” says Mr. Van der Kroef. “Since the S-68 E is capable of streaming up to 88 analog video channels in just one 5.25 (or 3U) x 19 inch power supply cabinet, it is also the most compact solution on the market.”

Consequently, keeping up with new technologies that utilize energy efficient solutions can make it easy to ecologically reduce costs as electricity bills rise.

### Sifting through the possibilities

“It can sometimes be quite confusing to know where to start,” adds Mr. Elliott. “There are really a lot of organizations burgeoning throughout the industry with guidelines for efficient energy use. We generally try to use standards set by the EU, but initiatives such as the Green Grid and quality assurance labels, like Energy Star, certainly also help to structure various power consumption criteria.”

Mr. Elliott goes on to explain that knowing how much energy a data center is using is integral to being able to modernize its electricity usage. “It’s important to know how much energy a given data center is consuming. The measurement developed by the Green Grid, known as power usage effectiveness (PUE), is a simple and relatively accurate way to estimate power consumption and to streamline a data center’s energy usage.”

The PUE measurement can, in turn, be used to gauge the efficiency of one data center against other data centers as well as to determine the best ways to reduce its calculated or current usage.

However, PUE does have some disadvantages. “One drawback is that PUE unfortunately does not say much about how much useful work is actually being done with the amount of electricity used,” Mr. Elliott explains. “Other methods are currently being developed by organizations, such as the Environmental Protection Agency (EPA), but there isn’t a measurement yet that gives us a good idea of the amount of electricity that is actually being used for the processes for which the data center was constructed.”

As a result, measuring PUE is a good place to start to modernize a data center but it is also equally important to stay abreast of the latest developments to most effectively assess its efficiency.

### Simplifying life for system managers

It’s not easy to be a surveillance system manager today. There is an omnipresent need to remedy the causes and curb the effects of global warming in the midst of a reeling economy and steadily increasing electricity bills. Still, there are a lot of options out there to meet the demands of society while at the same time reducing operational costs.

A key place to start is in the data center. An important step that managers can take to ensure that the amount of electricity that they are using is being consumed as efficiently as possible is to replace older equipment with the latest technology, such as high density solutions like the Siquira S-68. It’s also essential to make sure that the various equipment comes from companies and brands that are committed to creating and implementing sustainable technologies and solutions, such as Optelecom-NKF. Another critical step is to look into the effectiveness of the air conditioning system of the data center and find ways to leverage efficient technology and cooling while maximizing return on investment. In the end, the goal is to utilize resources as efficiently and economically as possible. Mr. Elliott is quick to point out, “You can save hundreds of thousands per year in reduced electricity consumption with low carbon footprint computer room designs like those from Capitoline.”

