



**POWER**

# Powering up

Bill Clifford, CEO at Aperture Technologies, explains how data centres can take electricity management to the next level

**F**aced with apparently insurmountable and rapidly exploding demand in the data centre, the manager at the end of his tether might be tempted to close his eyes tight and wish - really hard - for extra capacity. With a subtle change, that cunning plan might just work.

While available power is one of the tightest constraints on the data centre, it's not usually a physical restriction so much as a mental one. It's not what you've got, it's what you do with it. Better planning can unlock dormant capacity.

Data centres everywhere have seen power consumption rocket in recent years. Against the rise in demand for computing and storage, as businesses become more data intensive and more heavily regulated, we've seen the introduction of high density devices and virtualisation. Virtualisation can force devices to run at 60-70% capacity, dramatically increasing the power density. With power comes heat. With heat, comes a need for cooling. That exerts a further demand on the power infrastructure.

When power was plentiful, data centres didn't need to pay it much attention. Indeed, in the old days, if you had floor space for a server, you were pretty confident you had

the power to drive it. But as power has taken on greater importance, few data centres have adopted appropriate new ways to manage it.

Most organisations do not have a model of the data centre that gives them a clear picture of how devices are connected to the power infrastructure and the operational load being placed on it. This leads them to rely on the maximum power ratings provided by manufacturers to ensure that they do not overload the PDUs. Every overconfigured PDU and UPS is a waste of money, though, and another slither carved out of the data centre's capacity.

When the load is imbalanced across the power phases it causes excess heating in components such as PDUs, transformers and capacitors. Not only does that reduce the efficiency of those expensive components, but it also shortens their lifespan and results in power being wasted as heat. Imbalance causes more power waste in the higher loaded phase conductors, and requires that data centres use larger and exponentially more expensive components and feeders.

Balancing power across all three phases saves money because there are separate billing structures for the phases. Imbalances can lead to penalties, premium rates and

premature capacity limitations.

The long lead time for new equipment and rising power costs; make it vital that power use is planned and optimised across the data centre. Tools such as Aperture VISTA, combined with real time monitoring, make it possible to track the measured load of each device connected to the infrastructure, providing a more realistic picture of capacity use than estimates based on device ratings. When introducing such tools, data centres should ensure that they will work with up-and-coming technologies for monitoring power in real time at the device level. VISTA will provide a visual map of the floor to show where the hot spots are, so that installs can be planned to minimise cooling requirements.

When the supply of power consistently outstripped demand, data centres could afford to be lax in how they managed it. Now that demand is escalating so rapidly, and power is for the first time proving to be a limitation on the data centre's performance, a more mature approach is required. The tools are available today to visualise and analyse electricity use. As well as being valuable for planning, they can uncover and unleash redundant capacity immediately. For many managers, this could be a dream come true.

