

Meter, monitor, measure, manage

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Data centres have arrived! Once unknown and uninteresting to anyone but the specialist, data centres, the knowledge processing factories of our times, are becoming high profile. They feature on the BBC, they feature in PR wars – “mine is more efficient than yours is!” – they even feature on Facebook. Perhaps more importantly for organisations that operate them, they now feature high on list of priorities for finance directors and business managers as well. Why the attention? It’s all about money and carbon.

“You cannot manage what you do not measure”. “What gets measured gets done!” We hear these terms all the time, often applied inappropriately. They may be clichés, but in the context of data centres and power they hold relevance. With electricity prices trending upwards, ballooning energy bills and legislative drivers (such as the UK’s Carbon Reduction Commitment or CRC Energy Efficiency Scheme), there is a compelling need for businesses to manage data centre energy consumption.

Yet so many data centres lack the necessary instrumentation, even at a basic level, to make this possible. We talk regularly to IT, data centre and facilities managers who are being asked to provide detailed reports on data centre energy consumption, energy costs and carbon emissions. These requests come from a variety of departments in the organisation but are typically driven by a senior executive with responsibility for corporate responsibility, operations or finance. All too often, the only tools in use are clipboards and pens – for noting down spot readings from distribution panel meters! Not only is the job of reading meters this way error prone, time consuming, costly and difficult to audit, but it is also rather boring. The solution is an automated power management system.

So where do you start?

Step 1 is to identify the core business issue(s) to be addressed. For example, a co-

location company may be concerned to know “Am I billing my customers for the energy they are using?”; an ISP may want to know “How much more power are we drawing now than last quarter?”; the bank may ask “How much spare power capacity have we got for assimilating new systems to meet business demands?”; the local authority may want to check “How efficiently are we running our IT systems?”. To answer these questions requires metering typically at the rack level, but could be at the circuit or 3-phase PDU cabinet, and turning the meter data into actionable business information.

Step 2 is deploying meters and sensors at appropriate places in the data centre power path and facility. IP-addressable devices (supporting SNMP, ideally, or MODBUS-over-IP) provide for the greatest flexibility of automated monitoring and the data captured will enable understanding of the power and cooling demands of the data centre. At the PDU cabinet level, older systems may need to be retrofitted with an IP-addressable, 3-phase meter which can be done at moderate expense. Modern, intelligent PDU cabinets have sophisticated built-in metering capabilities and are IP-addressable, often providing for accurate branch circuit monitoring. It is also possible to



retrofit existing PDUs with intelligent distribution boards incorporating IP-addressable branch circuit metering.

Deploying intelligent power strips with inbuilt meters and switchable outlets in equipment racks gives visibility and control potentially to the device level. There is a wide variety of brands on the market offering metering granularity ranging from whole strip to per outlet, and from purely instantaneous amps to kWh. Alternatively, non-intrusive, IP-addressable, single-phase clamp meters can be fitted to existing dumb power strips and devices. Ideally, UPS, CRAC and chillers will also be fitted with meters if they do not already incorporate a metering capability.

Step 3 is to pull all the raw data together and aggregate it. Once collected, the data can be used whether to produce reports or to perform automated actions. We suggest that this is not a job for in-house technical staff whose time and skills are better spent on running the data centre and associated systems for the benefit of the business.

Ideally the software system will be vendor-independent, capable of integrating with all the components that provide the data, customisable, and incorporating an accessible database and a reporting tool. This means that authorised users can get the information they need wherever they are, whenever they want it, in a format they can understand immediately. Those users might not all be familiar with how to drive system management tools – and they should not need to be. Given a browser and a mouse, they should be ready to go. Armed with information, business people can take decisions. Deploying solutions such as these have yielded energy savings of > 30% and ROI measured in months. It pays to meter, monitor, measure and manage.

