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case.study

Greening IT with quantifiable energy efficiency monitoring

*This project won the DCS Award for Environmental Project of the Year. Chris Smith, Sales & Marketing Director **on365** pictured with Kevin Sell, Technical Facilities Manager Telstra accepting the award.*

The UK is rapidly losing the race to be the global powerhouse of the green economy, while other countries streak ahead in low carbon technology and development. Britain has fallen from third to 13th place in the league table of countries investing in alternative energy, according to research by US Pew Environment Group, and is not living up to its 'greenest Government ever' ambition pledged by David Cameron at the start of the Coalition Government.

Green initiatives have been pushed by the UK Government, but with tall targets such as those outlined in the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme (EEC), the recent Budget announcements have done little to help UK business. By law, the CRC Energy Efficiency Scheme is a mandatory commitment for all UK organisations that consumed more than 6,000 MWh per year of half-hourly metered electricity in 2008, affecting large public and private sector organisations. Reaching these targets and producing the 'Carbon Footprint Report' each financial year is a daunting task for facilities managers.

With data centres required to deliver 24/7 performance with N 1 resilience, service providers can struggle to draw up evidence-based plans with clear return on investment (ROI) for improving server estate energy efficiency, cutting energy costs and providing data for CRC Energy Efficiency Scheme compliance. The customer's monitoring programme, designed and implemented by **on365**, has established an effective and innovative in situ framework and ROI for such improvements.

Objectives and achievements

Telstra, a large UK based co-location server hosting company has taken practical steps to calculate power consumption levels within its managed service data centre. The objectives were to reduce both costs and power usage within the data centre, improve energy efficiency and tackle the CRC scheme's compliance demands. In particular, the company wanted to know whether a more energy efficient solution would provide a positive ROI – and demonstrate 'greener' operations to its many corporate clients. Having an established, successful infrastructure management relationship with **on365**, a specialist in the planning, installing, management and optimisation of physical IT infrastructure and utility services, Telstra now wanted a solution that would meet these core objectives. The **on365** team developed a solution and proposed a testing environment that would prove ROI based on statistical evidence of reduced energy consumption using operational data – something not done on this scale in the industry before.

For over 25 years, **on365** has been driving down costs, improving power and cooling efficiencies and managing risk as a specialist in the design, planning, installation, maintenance and optimisation of critical physical IT infrastructure and utility services. Whether it's a small server room or a complete datacentre build we have the necessary expertise to meet the IT power and cooling challenge, delivering support at the very foundation of your IT technology.

Recognised as the UK's most successful provider of the implementation and operation of the complete Network Critical Physical Infrastructure (NCPI) for major business, **on365** has the highest levels of of knowledge and competence, understanding both the technical and practical issues involved for your business, your people and your IT infrastructure requirements. With the need to deliver on the promise of investment made in IT now even more critical, **on365** is totally focussed on enabling organisations to get the best out of their IT environment.

on365 has an extensive and comprehensive product and service portfolio.

- APC Elite Partner
- SGI Trusted Advisor
- Kelway Premier Partner
- Uniflair Approved Partner
- Chatsworth Products European Certified Installer Partner

Our support capabilities encompass installation, system testing, network integration, on-site maintenance and audit/review services. Most importantly though, we understand the real needs of IT Managers and provide sound, practical advice to help proactively and efficiently manage across the datacentre physical infrastructure through to chosen IT hardware.

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client comment

Telstra

Technical Facilities Manager at Telstra commented:

"The key challenge was to create a contained cold aisle arrangement for the equipment to ensure a wider air separation gap between the hot and cold air within the server room, supported by energy efficiency monitoring results to prove the ROI of such a configuration. The project had to demonstrate a reduction in power costs as the server room was rendered more energy efficient and environmentally friendly. Beyond that, we needed to know if the new set-up would allow us to reduce the number CRAC units, providing scope for extra server space for corporate clients to use."

"Key to these needs was accurate statistical data to support compliance reporting targets such as the CRC, to identify key areas for efficiency saving areas, and prioritise on actions to achieve them all."

He continued: "We wanted to reduce the power consumption within the server room to improve energy efficiency and reduce costs. The **on365** specification, monitoring and assessment exactly matched the brief and the power savings forecast for the year and ROI have by far exceeded our expectations – we have a system payback in two years that will provide additional rack capacity at no extra cost. We have set up an energy monitoring framework that can identify infrastructure efficiency improvements and support CRC compliance reporting – and help us maintain overall system resilience."

The problem

On initial assessment by **on365's** engineers, the problem became clear. Air from the cooling aisle floor grills was mixing with the hot air from the servers, meaning that on reaching the air conditioning units the air temperature was significantly higher than the Computer Room Air Conditioning (CRAC) unit was designed to cope with. Because of this situation, the CRAC units had to work harder to cool the air before re-circulating it in the data centre environment.

Solution

The answer provided by **on365** was to not only support improved energy efficiency, but to also provide the data to validate the ROI of the new equipment and installation programme. Once complete, the solution installation provided the client with an ongoing environmental monitoring centre and the complete separation of the cold aisle to prevent the hot and cold air mixing. The 'before' results were measured over an 8 day period, as were the 'after' results. 103 separate temperature and humidity sensors were monitored within the hot and cold aisle as well as the CRAC unit supply and return temperatures and humidity. PowerLogic power metering was used on the DX CRAC units and APC in-line meters used on the chilled water CRAC units. All were fed back into APC's InfraStruXure Central product for review, which can be accessed by the customer and **on365** teams, in addition to end user corporate customers for specific sections. The installation continues to be monitored using this set-up.

What did we deliver?

Telstra was interested in an approach to monitoring that could help improve data centre efficiency, simplify additional reporting requirements such as CRC EES compliance, and demonstrate the feasibility and business case for increasing the amount of server rack space that could be made available for customer use.

on365 was able to design and implement a service that enabled the customer to meet these needs through surveys, an installation monitoring service and assessments that would demonstrably reduce power consumption and overall costs. After an initial review and design of a tailor made assessment to monitor the current energy consumption and level of efficiency, **on365** provided an energy monitoring and server rack reconfiguration that would enable cost savings with an ROI in less than two years. The recommendations were built on quantifiable statistics – accessible by the customer and its corporate clients. Data was collated during a server room infrastructure measurement period of over a month that provides comparisons before, during and after the system implementation. This is the first infrastructure analysis and product ROI of its kind. Following the system reconfiguration, the power consumption data proves system improvement and a business case for extra commercial rack space if required, in addition to support for continued monitoring. The investment in equipment and services for the energy efficiency monitoring and required alterations has delivered ROI in under two years.

Results

Collectively, **on365** provided an energy monitoring and server rack reconfiguration that will enable proven savings of over 15 per cent of the initial 151kW IT load per annum and over 15 per cent of the ACU power demand for the same load, expecting a further five to eight per cent in savings next year – savings which are already being seen. This equates to 115 metric tonnes of carbon per annum based on grid electricity supply – the equivalent of two short haul return air flights for 130 people. After the alterations were made, the room still maintains stable temperatures within the client's existing Service Level Agreement (SLA). ROI will be delivered in less than two years.

On completing the fit-out, the server environment only required the use of six out of the original nine CRAC units to maintain stable air and rack temperatures, a near halving of the installed base, while retaining N 1 system reliability. Overall, the customer now has the ability to closely monitor energy consumption, comply with SLAs in support of client operations, and tackle wider issues such as the CRC.

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