

Nominee: 2bm/ Nottingham City Council

Nomination title: Nottingham City Council; Data Centre Refresh Project of the Year

2bm first began working with Nottingham City Council after a phone call initiating contact back in 2014. During discussions 2bm quickly found the council was in fact in need of data centre expertise and engaged in conversation, with the original prerequisite of advising on the existing fire suppression system at the facility.

The Loxley House data centre comprises of a total of 62 server and network racks and is based on-site at the council premises in Nottingham city centre. The facility at the time was 10 years old but had more recently undergone an extension, however the distribution of power and cooling, as well as airflow had been somewhat side-lined in the process.

On first visit to the facility, 2bm's Design and Build Consultant Ted Pulfer quickly realised that there was a much bigger requirement, and the first stage of the project was to complete a Room Report to for customer. This was done on a complementary basis to expedite the process due to the urgent nature.

The Room Report is a service offered by 2bm which involves a data centre consultant attending site and carrying out an in-depth audit of the room. The information gathered from is then developed to create a total view of the facility with the objective of communicating immediate objectives and understand current operational parameters to establish the future needs with regards to space, cooling, power, security and monitoring. A set of recommendations are then made to meet the goals of high resilience, low PUE, sustainability and efficient use of the available spaces on site.

The report gave an unbiased and insightful overview and highlighted a number of areas where improvements could be made. 2bm's initial recommendations for improvements were:

1. Introduce data centre monitoring
2. Combat airflow issues to improve efficiency
3. Address and resolve current fire detection and suppression system issues
4. Deep clean of data centre

On first impression, the primary cooling system was working uneconomically due to inefficiencies with the airflow management. Confidence was also low with the secondary cooling system.

The existing airflow management was poor due to the arrangement of the cabinets causing recirculation and the mixing of hot and cold air, and lack of blanking off unused space. However, a holistic view was impossible as any form of monitoring had been omitted from the server room. This was therefore the first stage of the project and probably the most innovative aspect of the refurbishment: to install the non-intrusive power and environmental monitoring solution, the iMeter.

Initially used as a scoping exercise to understand the existing temperature parameters around the room and to indicate any potential pitfalls in the airflow, temperature and humidity sensors were installed at three different points in each aisle.

The iMeter also actively monitors the distribution of power within the cabinets and highlighted the hot spots around the room, prompting for a redistribution of the kit within the cabinets to increase efficiency. This capability also informs the council as to which cabinets are best to house future installations.

In October 2015 water detection with 18m leak sensor cables were installed. This allows the facility to be alerted to any drops of water sensed in the data centre environment at the first possible stages.

In addition the iMeter is set to control the room's secondary cooling solution, a Denco DX down flow cooling unit. This means if a pre-set temperature threshold within the room is exceeded, a signal is sent via the iMeter to activate the cooling units. This action was crucial as the most common cause of electrical component failure and a significant contributor to network downtime is over-temperature, and this is often a result of an air-conditioning failure which can normally be left undetected for many hours.

Working in this way as if a mini BMS the iMeter is monitoring power, temperature, humidity, water leak detection, smoke detection and has dry contact cables for monitoring UPS and cooling units. Monitoring everything in one place, Nottingham City Council now have the peace of mind knowing that they will be instantly alerted to any changes in the environment.

In regards to the existing fire suppression, the size of the room had changed since the room's original design. A room integrity test was carried out and 2bm pressure tested and changed all of the bottles before they were soon to go out of date , rewired the fire suppression detection electrical system and in conjunction with the insurance company's requirements, advised on the immediate commissioning of the system.

As part of step two, 600 blanking panels were installed in all rack space U positions to increase room cooling efficiency (with a potential ROI being less than three years), a new VESDA system was installed and the room and floor void underwent a full clinical clean.

After all the highlighted problems mentioned above had been rectified, 2bm set out to embark on stage three of the project which was to issue an in-depth policies and procedures report to the client. This was then followed by an on-site training day where key data centre personnel from 2bm met with a team of 13 council members to discuss and advise on data centre guidelines and best practices.

This refurbishment work began in 2014, progressed and developed throughout 2015, and is still continuing today with the latest instalment of security cameras and on-going maintenance contracts. As the council's critical operations are 24/7 the biggest challenge is to minimise any disruption and of course to avoid downtime.

As a result of the work carried out, Nottingham City Council's Loxley House data centre is now fit for purpose and conforms to and exceeds recommended standards. By implementing the iMeter the council are able to greatly increase their monitoring, management and safety aspects of the data centre, whilst having a constant overview of temperature, power and space which will assist with future planning.

Thanks to 2bm efficiency has been greatly improved at Loxley House, operating costs reduced and industry best practices implemented.

Why nominee should win

1. 2bm has changed the way the client views their data centre; crucial for successful future-proofing of the room.
2. 2bm subscribes to the policies and aims of the Green Grid, the Uptime Institute, ASHRAE Thermal Guidelines, Data Centre Alliance and the European Code of Conduct for Data Centres. All of which have been adhered to and implemented within this refurbishment project.



3. Finally, Nottingham City Council remains a current customer of 2bm's today. Customer loyalty is far from being determined by luck and moreover a result of good quality, great service and competitive pricing.