High Security Government Research Laboratories

[dstl]

30%

Reduction in cooling energy usage!

Partner

Dataracks is a UK company specialising in the design and manufacture of data racks, data room air flow management and security solutions.

Dataracks designed, manufactured and installed the aisle enclosure systems at dstl, producing roof panels and in-fill sections to dam the gaps between racks, and to seal around columns etc.
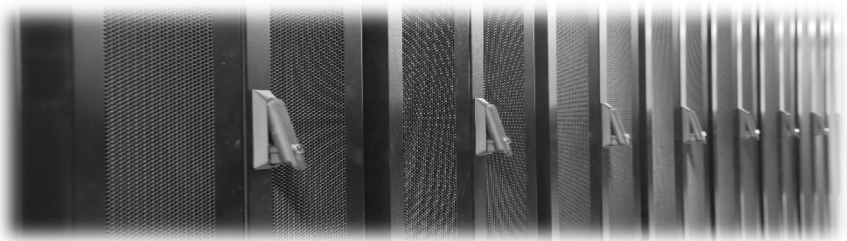
dstl brings together the defence and security science and technology community, including industry, academia, government and international partners, to provide sensitive and specialist research services to the Ministry of Defence and wider government.

www.gov.uk/government/publications/defence-science-and-technology-laboratory-overview
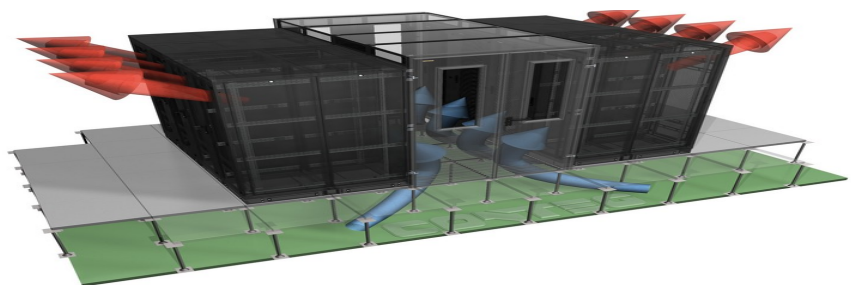
All good research centres generate large quantities of data. dstl is no exception. Many terabytes of information are securely processed and stored in a number of specialised high security data centres.

With a wide range of processing and storage demands from a host of discrete users, the power and cooling demands in the dstl data centres are dynamic and unpredictable. The facilities were originally designed along traditional lines, with open aisles of racks, and perimeter sited Computer Room Air Conditioning (CRAC) units. This meant that, in order to accommodate any "worst case" scenario, the cooling units were supplying too much air, at unnecessarily low temperatures for the majority of the time. The open aisle topology resulted in much of the supply air bypassing the servers, and returning to the CRAC units at temperatures only one or two degrees above optimum aisle temperature.

Once the aisles were enclosed, and the supply air segregated from the return air, the CRAC units could be "tuned" to deliver the correct quantity of air at a supply temperature that can safely be much closer to the desired aisle temperature. The fans do less work. The cooling system does less work and, when it is cooling, the system is

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far more efficient.

"Real-time monitoring of aisle conditions gives us the confidence to 'turn down the wick' on the cooling systems while maintaining an optimum server environment"

The Challenge

The key to getting the best from legacy equipment in a topology upgrade is giving the end user confidence in the new protocols – it can feel "wrong", for instance, when the air temperature in the data hall rises above what has long been considered normal. It is crucial that those who use and manage the space are comfortable that the servers are still being cooled correctly.

The Solution

To achieve this comfort level, En-Technologies designed, built and installed a bespoke temperature and humidity monitoring system. Each aisle has multiple temperature sensors situated strategically along its length, together with from these sensors is

The system displays real-time temperature profiles for each of the aisles. It also records and displays trend graphs, so that performance can be readily reviewed. Data centre managers can immediately see the effects of any changes that are made to the cooling control systems (such as raising the return air set point). The aisle profiles created by the multiple sensors allows supply air registers to be "tuned" to deliver air where it will be useful rather than wasted.

The Benefits

The combination of En-Technologies' intuitive, user friendly environment monitoring system with a Cold Aisle Containment topology has delivered:

- Significant Energy Savings
- Improved Resilience
- Improved Air Quality Control
- A Payback Period of less than 18 months

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